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# THE RELATIONSHIP OF GEOGRAPHIC DISTANCE AND FIVE OTHER HOME AREA VARIABLES TO UNIVERSITY PARTICIPATION

by

© ROY M. K. WAGNER

A THESIS
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE RELATIONSHIP OF GEOGRAPHIC DISTANCE AND FIVE OTHER HOME AREA VARIABLES TO UNIVERSITY PARTICIPATION submitted by ROY M. K. WAGNER in partial fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Educational Administration.

# ABSTRACT

The major purpose of the study was to investigate the relationship of geographic distance and five other home area variables to participation rates in degree granting public universities in western Canada. The conceptual framework from which this study emerged, identified prospective students as a vital part of the university system. Consequently, the theoretical background for the study involved organizational-environmental relationships dedicated to ensuring a continuous supply of human resources as organizational input.

Data was collected from nine of the eleven universities west of the Ontario-Manitoba border and included undergraduates who were born in Canada and registered for the first time in the Faculties of Arts, Science, Education and Arts and Science between May 1, 1976 and May 1, 1977. The universities included in the study were: the University of Victoria; the University of British Columbia; the University of Lethbridge; the University of Calgary; the University of Alberta; the University of Saskatchewan; the University of Regina; Brandon University; and the University of Manitoba. Data describing the home area origins was taken from the 1976 and 1971 Census summary tapes.

Analysis included extensive mapping of: the participation rates over the full- and part-time catchment areas for each university; the unresponsive locations within each university catchment area from which there were no new registrants; areas of competition between universities within provinces; and, the destinations of new enrollees who registered

at universities in provinces adjacent to their home province. In addition, a stepwise regression procedure was employed to assess the relative power of six home area measures to predict the rate of participation at a particular university from the points of student origin within its catchment area. The six home area measures were: geographic distance between the student origins and the university; average family income for the various home areas five years earlier; the percentage of the population in the area having attended university; the percentage of prospective students in the area who were unemployed; the percentage of the prospective students in the area under the age of twenty-five; and the average family size of families in the area with at least one child at home.

Four key findings of the study were:

1. Participation rates at various distances from the university centre differed for each university; however, the full-time participation rates were consistently greater than the part-time participation rates for the same university at various distance intervals from the university.

2. The within-province competition between major public postsecondary institutions for students, had a suppressing influence on both full-time and part-time participation rates at the universities studied, while there tended to be very little competition for undergraduates between provinces.

3. Of the six home area measures investigated, the two best predictors of full-time participation for the nine universities, tended to be distance, followed by average family income five years earlier, while the two best predictors for part-time participation tended to be

average family income five years earlier, followed by distance. Both distance and average family income were found to be negatively correlated with full-time and part-time participation rates.

4. There tended to be consistent differences in participation between universities within the same province identified as "younger" and "smaller" universities (the University of Lethbridge, the University of Calgary, the University of Regina, and Brandon University) and universities identified as "older" and "larger" universities (the University of British Columbia, the University of Alberta, the University of Saskatchewan, and the University of Manitoba), with the University of Victoria exhibiting characteristics of both the "smaller" and the "larger" universities.

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# CHAPTER 1

## INTRODUCTION

Higher Education is faced with declining enrollments and increasing competition for students and budgets in the 1980s. In planning their future, two alternative courses of action available to colleges and universities would be either to adapt to the situation by increasing their non-teaching roles in research and non-degree community service or diversifying their teaching roles to include prospective students currently not served by the University. The latter is the concern of this study.

Ungar (1980:58) in an analysis of enrollment attrition, considered the level of undergraduate enrollment to be constituted by three factors:

1. the level of intake of new students;
2. the retention of students already enrolled; and
3. the number of former students who re-enter.

Numerous studies have concluded that certain types of institutional activity can lead to a slowing down or perhaps reversal of the enrollment declines by improving the success universities have with respect to their level of intake of new students. Five such studies were reported by Dursne and Zavada (1977), Murphy (1977), Treadwell (1973), and Kinnick (1975). Others such as Krachenberg (1972), Huddleston and Wiebe (1978), Kotler (1975) and Mudie (1978) have advocated the active marketing of

university services to increase the number of new enrollees. Thus enrollment may be viewed as an indication of the number of students as consumers who have "purchased" the institutional service offered by universities and colleges and generally represents only a relatively small fraction of the prospective students from a given geographic area. The clientele for higher education are currently in a position to weigh various postsecondary educational options, and indeed, other employment and leisure time options, to determine which is most appropriate before taking a decision to enter an educational system. Once the decision is made, the client or prospective student enters the educational system, becomes a student or new enrollee. In addition to having been viewed as consumers of an institutional service, students have been viewed by organizational theorists as an input resource for the institution. Perrow (1967:195) viewed the student as a source of "raw material" for the educational organization:

> The object, or "raw material," may be a living being, human or otherwise, a symbol or an inanimate object. People are raw materials in people-changing or people-processing organizations; symbols are materials in banks, advertising agencies and some research organizations; the interactions of people are raw materials to be manipulated by administrators in organizations; boards of directors, committees and councils are usually involved with the changing or processing of symbols and human interactions, and so on.

According to Thompson (1967:19), an organization's control of its input and source of input, as well as its output, is important for organizations in fluctuating environments, such as in times of declining enrollments. Thus, it follows that even though prospective students are located outside of the organization and in an environment shared by competing organizations, securing them as sources of "raw material" for the organization, constitutes a serious concern in higher education today.

Factors influencing enrollment are receiving greater attention today than ever before. Geographic distance separating the institution from its prospective students is one such factor. With declining numbers of prospective students as well as enrolled students, it would appear that the university's goals as a service organization will be taken more seriously by both university and public. With an increasing emphasis on public service, universities will be expected to provide postsecondary service to all corners of their constituencies. An awareness by university planners of the geographic and demographic characteristics of their institution's student population and prospective students, would appear to be essential for sound planning.

Correspondence courses, part-time student programs, and, in the last decade, entire institutions such as the British Open University, Tele-Universite in Quebec, and Athabasca University in Alberta, have been dedicated to providing students previously unable to participate in higher education with access to it. One of the factors influencing enrollment which each of these institutions have struggled to overcome has been that of geographical distance separating institutional resources from students. In some instances, evening courses have been conducted to permit students to travel to the institution after a day's work. In other situations, students have been able to study at home or in their local community.

# PURPOSE OF THE STUDY

The purpose of this study was to examine the relationship of geographic distance and five other home area variables to participation rates in degree granting, public universities in western Canada.

## Subproblems

The study was comparative with three sub-problems formulated to address the general research problem:

1. What were the characteristics of the catchment areas in 1976, for each of the nine public universities in the population defined for this study? This sub-problem was examined by answering the following questions:

a) What were the geographic profiles of the various university catchment areas?

b) What was the relative effectiveness of the universities in recruiting new registrants at selected distance intervals?

c) To what extent was the gravity model for population migration applicable to the enrollment of new registrants?

2. What proportion of the variation in university participation could be attributed to distance and five other home area characteristics? This sub-problem was examined by considering the following six home area variables:

a) Distance between the home area and the university;

b) Average family income for the area;

c) Average family size for the area;

d) Percentage of prospective students unemployed;

e) Percentage of prospective students under the age of 25;

f) Percentage of the total population fifteen years and over, having attended university.

3. What similarities and differences existed between full-time and part-time students with respect to sub-problems One and Two?

## SIGNIFICANCE OF THE STUDY

This study was significant from four perspectives in that it:

1. Employed a relatively new approach to examining university participation;

2. Contributed to policy development and planning in higher education;

3. Contributed to an aspect of organizational theory having received little attention to date;

4. Provided base-line data for future studies.

Each of these is discussed in more detail below.

### Research Methodology

Robinson (1976:520), in a review of an earlier article by W. D. Pattison (1964), discussed four attributes of the discipline of geography, three of which are relevant to the type of methodology used in this study. The three attributes were:

1. A spatial tradition, in which geographers have been concerned with the "attributes of place--its location, position, direction, and distance--and aspects of the form and movements related to these attributes."

2. An area studies tradition, in which "the geographer's methodology is to divide the world into smaller areas for convenience of study."
3. A man-land tradition, in which there has been a concern with "probing the relationship between man and his physical environment."

It would appear that to date little application of the geographic approach can be found in educational research. Olson (1975:281), in support of geographic approaches for educational research and planning, commented that "when considering the spatial distribution and analysis of variables associated with public education, there appears to be a serious vacuum in educational research." Hones and Ryba (1972:135) concurred with the need to include geographic formulations and approaches in educational research:

> It is thus very encouraging to see the geographers beginning to apply their expertise to such subjects as education, including the consideration of such modern geographic techniques as the search for nomethetic models or the application of locational analysis.

The gravitational model employed by geographers and social scientists to describe the spatial interaction of populations was the type of formulation referred to by Hones and Ryba. Since its first application to human interaction phenomena over thirty years ago, it has been intensively investigated in a variety of situations, ranging from the location of retail outlets to planning traffic patterns, with all involving either spatial interactions between people or population mobility. It is interesting to note both Pederson's (1970) successful application of the gravity formulation to map the diffusion of educational innovation and a recent article by Tribble and Mitchell (1977) encouraging geography teachers to include consideration of the

gravity formulations and their application in geography curricula.

Thus, it was considered appropriate to take the analysis a step further and determine the utility of the "gravity model" to planning in higher education by assessing how well the gravity potential formulation described the distance-participation relationship for the various universities.

Anderson et al. (1972:21) noted the utility of simple descriptive quantitative studies similar to this study:

> There is much to be said for going back to see what can be learned from descriptive-quantitative compilations of a less formalized sort (even without using complex statistical or econometric models). Many data are widely scattered through reports on the higher education systems in many states, especially in studies intended to determine the need for additional colleges.

In addition, Webb and Weick (1979:658), in their essay on unobtrusive measures in organizational theory research, stressed alternative collection procedures to the self report:

> Heavy prior reliance on self-report has excluded crucial populations from organizational inquiry, postponed cross-checking of propositions, inflated the apparent consequentiality of minor irritations in the workplace, and imposed a homogeneity of method which raises the prospect that the findings of the field are method-specific.

This study employed data based on the permanent mailing addresses used by the students when they first registered at a university. Census data prepared by Statistics Canada served as a secondary source of data. Generally however, the approach advocated by Webb and Weick influenced the design of the study to the extent that the research methodology employed in this study may be loosely described as a *descriptive quantitative* methodology employing *unobtrusive* measures.

## Educational Planning

According to Olson (1975:284) many aspects of educational planning and policy making are based on spatial considerations involving residential patterns:

> Educational planning treats a wide variety of socio-demographic variables within a spatial context and provides analyses and future projections for the integrative purposes of policy making. The discipline of geography can offer a systematic means for understanding process, functions, and growth variables and can also provide the tools of analysis needed by educational planners and their clients (school administrators) to make rational educational decisions and to anticipate and plan for future developments in education.

The universities and colleges included in this study were public institutions. As such, they were charged with the responsiblity of serving the general public within the limits of their resources and their academic standards. Consequently, the spatial relationship between the university and its prospective students is useful for institutional planning. Such information can serve to identify geographical areas or communities requiring greater or lesser institutional attention. Olson further suggested that public institutions should be concerned with the spatial analysis of migration patterns. Such analyses would permit school and university administrators to adjust both facilities and instructional design to better suit the needs of the student body.

In a report reviewing one of the eleven regions in Germany reported by Geipel (1968) to show how applied geography could make an important contribution to educational planning, Hones and Ryba (1973:138) comment that:

> "Educational Planning on a Territorial Base," is concerned with finding which areas could be termed "educational deserts," their extent and the reasons for their emergence.

> This geographer has shown very clearly how "applied geography" has an important contribution to make in educational planning on a regional base.

They continued by describing some of the planning decisions which could usefully employ geographic techniques:

> Decisions concerning optimum size of college envisioned, the number of colleges needed in a specified area, the precise location of the sites chosen, the amount of residential accommodation required in each case, are some of the many faced by the educational planners. Too often otherwise valuable preparatory surveys appear to have made little use of geographical techniques which would have been directly applicable.

## Theoretical Perspective

In recent years, the environment for higher education institutions has become increasingly uncertain and turbulent due to:

1. declining fertility, which has in turn resulted in a decline in the numbers of conventional prospective students;
2. more options in higher education as the ratio between student places and student demand increased;
3. the availability of postsecondary options other than higher education such as vocational schools, community colleges, and further education councils.

Therefore, action to ensure continued survival implies strenuous institutional activities related to securing prospective students. Because of the investment in tenured teaching positions and the continued need for public undergraduate education, it is likely that institutions may opt for retaining their undergraduate teaching role as long as possible. To do so, however, would mean deploying a more active organization-environment interaction which would likely be conducted

through boundary spanning activities such as inter-organizational linkages, community liaison activities, and public relations activities to secure and maintain an adequate supply of prospective students meeting the institution's admission requirements.

A Student Flow Model was used by Konrad and Small (1977), and subsequently by Ratsoy (1979), to identify points in the student flow through the institution, at which various types of data could be generated for the university to permit the evaluation of its programs. The model was particularly useful to this study in that it recognized the need for the university to be concerned with student pre-entry activities. This study, with its examination of the distances separating prospective students from university centres and the predicted power of other selected home area variables, was an investigation of the relative success of universities with respect to their pre-entry activities. Therefore, *as pre-entry research*, it can make a useful contribution to organizational theory--particularly as it applies to higher education.

### Base-Line Study

This study was a base-line descriptive study aimed at documenting the geographic characteristics of participation rates for public universities in western Canada and examining both the relationship of competition between universities and their relative participation rates. As a base-line study, it was intended, in part, to collect bench-mark data representing the beginning of what was anticipated to be a dynamic period for universities. Consequently, data collected in this study have important implications for future studies concerned with measuring

changes in participation characteristics at universities and changes in competition between universities over time.

## DEFINITION OF TERMS

Operational definitions for terms frequently used in this study are as follows:

### Enrollment

Enrollment at a given university was defined as the number of prospective students having registered for the first time at that university between May 1, 1976 and May 1, 1977 and for one or more credit (degree) classes.

### Prospective Student

A prospective student was any individual born in Canada who had obtained a secondary educational certificate but had not attended university prior to May 1, 1976.

### Participation Rate

The participation rate for a given university was defined as the percentage of prospective students from a specified geographical area who had enrolled in the university for the first time during the period under study.

### Full-time Student

A full-time student was defined as a student whose registration during the period under study was for the criterion number of credit courses specified by the university to permit the student to qualify for the Government of Canada Student Loan Plan.

### Part-time Student

A part-time student was defined as a student whose registration during the period under study did not meet the criterion number of courses required for full-time status above.

### Western Canada

For the purposes of this Study, western Canada referred to the provinces of Manitoba, Saskatchewan, Alberta, and British Columbia along with the 1976 Census Divisions numbered 58, 59, and 60 in Ontario.

### University Centre

The term university centre was used to identify the urban location of the university.

### Address Revision Error

The address revision error was an error incorporated into the data of those universities which had provided data where students, since 1976, could have had their addresses altered and up-dated if they had changed their place of residence.

### Census Consolidated Subdivision (CCS)

The census consolidated subdivision (CCS) was defined by Statistics Canada (1977) as "the geostatistical area constituted by grouping all of the census subdivisions (CSD's) located geographically within its boundaries." The term "census consolidated subdivision" was used interchangeably with "home area" in this study.

### No-Response CCS Areas

Census consolidated subdivisions (CCS's) or home areas from which there was no one enrolled at the university, were defined as no-response CCS areas.

### Home Area Variables

The home area variables were selected home area or community factors which were thought to influence the prospective students' decision whether or not to enroll and at which university to enroll. The home area variables examined in this study included: the distance between the home area and the university in which the student enrolled; the average family income in the area five years earlier; the average family size for the area of those families with at least one child at home; the percentage of prospective students unemployed; the percentage of prospective students under the age of twenty-five; and the percentage of the population over the age of fifteen who had attended university prior to 1976.

### Competition Areas

Competition areas were those home areas identified as shared CCS areas which were serviced simultaneously by two or more universities such that the universities involved all had new enrollees from the area.

### Dominant University

A university was referred to as a dominant university when it had the highest participation rate for an area of competition or shared CCS area.

### Dominated Area

A dominated area was the aggregated cluster of smaller areas of competition or shared CCS areas dominated by a single university.

### Distance Effectiveness

The term distance effectiveness, as it was used in this study, referred to how successful a university was relative to other

universities in the study, in attracting prospective students to enroll as full- or part-time undergraduates from various distances from the university centre.

## STUDY ASSUMPTIONS

1. Instructional variations in the Arts, Science and Education faculties did not effect the relative participation rates at the universities in the study;

2. Variations in admission criteria, in as much as they related to the faculties of Arts, Science, Arts and Science, and Education, did not effect the relative participation rates at the universities;

3. Differences in choice decisions made by students transferring from community colleges or other universities and freshmen, did not effect the relative participation rates at the universities investigated in this study;

4. Variations in the cost of attending universities, with the exclusion of costs attributable to student migration distances, did not effect the relative university participation rates;

5. For each home area, the number of persons with a secondary certificate who had not attended university (defined as prospective students), represented the potential recruits for a university;

6. Variations in the individual factors influencing enrollment such as scholastic aptitude, achievement, and aspirations did not effect the relative participation rates at the universities investigated in this study.

## DELIMITATIONS OF THE STUDY

The delimitations of the study were as follows:

1. The study was limited to faculties of Arts, Science, Arts and Science, and Education in nine of the eleven universities in western Canada. These faculties have experienced a leveling and decline in enrollments while many professional faculties within the same institution have experienced an increase in enrollments. Consequently, the findings for a particular university could not be generalized to other faculties within the same university. In addition, since the study only involved universities in western Canada, generalization to other universities outside of western Canada would be difficult.

2. Due to technical difficulties involved in accessing the appropriate data, only nine universities in western Canada were included in the study. Therefore, it ignored the effects of competition from other universities and those community colleges with two-year transfer programs.

3. It should be noted that the universities were in reality not only competing with other universities for prospective students, but with other postsecondary institututions, and a variety of employment and leisure time activities. Consequently, the effects of non-university competitors for prospective students' time and energy were not considered in this study.

4. The measures of home area variables used in this study were limited to population or community measures of the home area in which the new enrollee was located at the time of his or her application for

admission to the university. No attempt was made to derive direct measures of the characteristics of the individual or his or her family.

5. The analysis of interprovincial student migration was confined to a study of the province or provinces immediately adjacent to the province of the university in question. Consequently, students who, in their migration to university, "skipped" a province, were excluded from this study. In addition, students from the Yukon and North West Territories were also excluded.

## LIMITATIONS OF THE STUDY

The limitations of the study were as follows:

1. The CCS areas used as the smallest unit of analysis were located geographically by a point placed at the approximate centre of gravity for the population. Consequently, the total population for each CCS area was treated as if it were located at a single point.

2. The number of prospective students generated by census data was an approximation of the potential university students. However, due to the census data categories, prospective students included those with secondary education certificates but who had not attended university previously. Excluded were individuals without a secondary certificate, but who could gain admission through "mature student" admission policy.

3. Because the task of calculating actual road mile distances was very complex and costly, this study, as similar studies in the past, used straight line distances between the students' home areas (CCS areas) and the university at which they enrolled. The only exception to the latter

was an adjustment made for students crossing between the British Columbia mainland and Vancouver Island to attend university. The 60 mile "straight-line" distance between Vancouver and Victoria was treated as if it were 140 miles due to the large number of students involved and to the unusually long travel times for the 60 mile distance.

4. Of the nine universities studied, the universities of Manitoba and Lethbridge were only able to provide student data in which since 1976 students could exercise an option to have their addresses up-dated to reflect any change they made in their place of residence. However, in the case of the universities effected, a small sample of addresses was mailed to the universities involved and checked manually against the original "application for admission" files or registration forms to determine the extent of the error due to address up-date. Thus an address revision error was computed to permit the reader to appreciate the extent of the error involved.

5. Transfer students, most of which were first and second year students from community and junior colleges in Alberta and British Columbia, were included in the new enrollee population studied. However, in the prospective student population, they were excluded by the operational definition of "prospective students" because they had previously attended university.

6. The source of data for all of the independent variables other than distance, was the Statistics Canada Summary Data on magnetic tapes. The nature of the summary data demanded that all statistics in the data be rounded off to the nearest five. Consequently, aggregations of the rounding off error could have occured during aggregations of the data.

However, since most of the statistics thus aggregated were in the hundreds or larger, rounding off errors were relatively small.

## BACKGROUND TO THE STUDY

Background information appropriate for this study is briefly sketched below within each of the following areas: _university enrollments_; _higher education and life-long learning_; and, _higher education in western Canada_.

### _University Enrollments_

Each province in Canada has a different educational system. These systems differ in a number of areas as described by R.M. Pike (1978:18):

> . . . variations in the number of high school grades that a child must pass through in order to matriculate; the amount and types of financial aid available to university and college students; and the structure of the nonuniversity postsecondary sectors.

However, as Pike pointed out, what the provinces have in common, aside from social, demographic and financial pressures, is the dominance of formal educational systems.

Max von Zur-Muehlen (1977), in a review of Canadian university enrollment trends over a twelve-year period from 1962-63 to 1973-74, determined that the total full-time undergraduate enrollment increased from 130,000 to 295,000 with slightly more than half of the enrollment in the Arts and Sciences. Arts increased from 55,869 during 1962-63 to 85,061 in 1973-74, while Education enrollments increased from 16,061 to 38,450. Part-time enrollment for Arts increased from 20,653 to 46,827,

while for faculties of Education, the part-time enrollment increased from 6,000 to 26,000.

Statistics Canada (1979:19) projections for full-time university enrollment demonstrated a slight decline between 1976 and 1979, followed by a slight rise and a leveling off until 1983 at which time the full-time enrollment at universities is predicted to decline sharply. von Zur-Muehlen (1979) confirmed that enrollment declined 3.2 percent between 1976-1977 and 1977-1978 and that, while professional colleges, with the exception of Education, experienced an increase, the decline was almost exclusively in Arts and Science.

Some forecasters, such as Clark, Devereaux, and Zsigmond (1979), regarded the problems as cyclic and have predicted recovery in the late 1980s. Others are less sure and are so caught up in facing the present situation that they make no prognosis. To some university administrators and faculty the situation has provided an opportunity to reshape the delivery of education. To others, it has been viewed as a threat to the operation of their institutions. Evans (1977) refered to the relative drop in priority accorded to university education by provincial governments and the declining support for university research by the Federal Government. Manns and March (1978) theorized that during an era of rising external resources and opportunity, the aspiration level within an organization increases while internal competition decreases. They viewed the current decline in university enrollments as reducing slack, lowering the level of aspiration, and increasing the degree of internal competition for resources and students.

J.M. Duggan (1976:8), in his introduction to the proceedings of the Colloquium on College Admissions, acknowledged the growing competition between institutions of higher education in the United States:

> How we will respond to declining enrollments is not yet clear. While competition of a gentle sort has always characterized relationships among colleges, it is conceivable that more competition will erode the minimal co-operation that now exists among colleges, particularly between the public and independent sectors. No-need scholarships for able students, diminishing state aid to independent colleges, cut-throat recruiting, and antagonistic lobbying at state and federal levels, may well increase.

Folger (1974:405) pointed out that as enrollments level off and decline nationally and competition increases, it is substantially more difficult to adjust to enrollment decline than it would have been to a steady enrollment or an enrollment increase.

As a consequence of declining enrollments and a competition for scarce students and resources, universities have turned to institutional marketing and more aggressive recruitment of prospective students. There is much reported in the recent literature which relates to the marketing of higher education, with college admission offices and offices of institutional research at the focal point. Philip Kotler (1975:5), a leader in applying commercial marketing principles to non-profit organizations such as universities, defined marketing as:

> . . . the analysis, planning, implementation, and control of carefully formulated programs designed to bring about voluntary exchanges of values with target markets for the purpose of achieving organizational objectives. It relies heavily on designing the organization's offering in terms of the target markets' needs and desires, and on using effective pricing, communication, and distribution to inform, motivate, and service the markets.

Huddleston and Wiebe (1978) described how admission personnel, partly in response to overt and covert pressures, have begun considering new strategies for recruiting students. Huddleston and Wiebe referred to the "new strategies" as marketing strategies and employed Krachenberg's (1972:380) definition for marketing:

> Marketing deals with the concept of uncovering specific needs, satisfying these needs by the development of appropriate goods and services, letting people know of their availability, and offering them at appropriate prices, at the right time and place.

As universities enter a period of marketing and relatively aggressive recruitment, there are important implications for university admission officers and offices of institutional research. Papers presented to the Colloquium on College Admissions in 1976 stressed the need for informal and more sophisticated marketing techniques for the college admission offices, to help them cope with the decreasing numbers of prospective students. Thus the importance of the college admission office is increasing as admissions become a more crucial element to the colleges' financial well-being. B. H. Allen (1978), in a paper presented at the 1978 Forum for Institutional Research, dealt with the role of institutional research in the university marketing process. Allen emphasized that a timely flow of decision-oriented information was necessary to support the marketing planning process. According to Allen, it is important that institutional research offices "design and implement a marketing information system to serve the primary marketing-oriented units within the organization." Considering the need expressed in the literature for systematic marketing in higher education, it would seem that the on-campus institutional research offices in many universities

may require an increase in both status and funding. Similar arguments have been made by Folger (1974) and Duggan (1976) to up-grade institutional research offices as an adaptation to both declining enrollments and increased competition for prospective students.

The prospective student has assumed a position of new significance to institutions of higher education. It would appear from recent literature that universities and colleges are not likely in the future to concern themselves just with reducing existing barriers to recruiting new students, such as university-prospective student communication (Terner:1978), but will tend to participate more in the preparation of a prospective student _before he or she even considers entering higher education_. According to W. T. Furniss (1979:137), the American Council on Education reached the same conclusion:

> . . . co-operative efforts to enlarge the pools of qualified minority candidates must supplement and eventually supplant, the increasingly competitive efforts among programs to recruit those already qualified.

Universities and colleges in Canada have just begun to experience the enrollment decline and inter-institutional competition for prospective students experienced in the United States five to ten years ago. For many institutions the reaction has been an examination of their programs, their admission offices, and their offices of institutional research. In addition, L.A. Glenny (1980:376) reports that universities and colleges, largely as a result of declining enrollments, have begun to view "lifelong learning" as a new and alternative emphasis. Hence, faculty and administrators are re-examining the manner of relating to prospective students and how institutions might change to attract more

part-time enrollees and thus better serve lifelong learners.

## Higher Education and Lifelong Learning

Hecquet, Verniers, and Cerych (1976) reported that declining university and college enrollments have occurred in countries other than the United States and Canada. They also noted the excellent opportunity that institutions have to make up for the missing students from traditional sources:

> . . . Universities are likely to make strenuous efforts to safeguard their level of income and research activities, and to do this they must maintain a sufficient number of students. This suggests that they will try, as some are doing already, to make up for diminishing enrollments from traditional sources by attempting to attract a more varied clientele. There are a number of things they can do, such as making their courses and timetables more flexible, renewing and diversifying teaching methods, collaborating with non-university institutions, endeavoring to meet the particular demands of certain social groups, and so on. . . . Thus structural changes and transformations in teaching methods, long recognized as necessary but never thought likely to be introduced while student numbers remained high might get under way in the present climate of slower growth (Hecquet, et al., 1976:85).

Gilbert (1978) also observed that the role of the academic institution is changing in relation to its environment. Gilbert proposed that colleges and universities use an andragogical approach rather than a pedagogical approach and thus make academe more relevant to the community.

In a review of part-time participation in higher education, Eddy (1978:2) described the remarkable growth of part-time enrollments in the United States and observed that during the period of 1969-72, the number of full-time students grew by 8.8 percent while the number of part-time students grew by 20.4 percent--roughly twice as much. Margarrell's (1978) study indicated that women have been enrolling as part-time

students at a much faster rate than men, and in 1978 made up 52 percent of the part-time enrollments. Most of the part-time students, however, were in the earlier stages of the degree programs. Of the latter, more of the new part-time enrollees were women, whereas more of the new full-time enrollees were men (Wade, 1977:390).

It is interesting to note Eddy's (1978:2) observation that for graduate study, increases were proportionate to the undergraduate enrollments and that there was a more rapid increase of women than men which also corresponded to trends in the undergraduate enrollment:

> . . . this trend is strengthened by indications that part-time graduate students are currently interested in staying in graduate school slightly longer (Baker 1977p. 3); the implication here is that the institutions that can best accommodate part-time students stand the best chance of increasing their enrollments for master's and doctor's degrees.

Upon examining reasons for the trends in part-time enrollments, Furniss (1975) suggested that the value placed on higher education has changed and that some individuals not able to afford full-time enrollment were enrolling part-time as an alternative. However, Eddy (1978:3) proposed that higher education no longer serves "primarily as a means of preparation for maturity, but accommodates lifelong educational needs as people perceive them: career advancements, career change, or personal fulfillment," while Schultz (1976) and Branan (1976) reported that part-time students regardless of age, generally combined their educational pursuits with employment.

As colleges and universities sought to secure the part-time prospective student, they had to undergo changes in their instructional technology. In a review of the literature, Eddy (1978:3) summarized ways

in which instructional technology has been altered to meet the needs of part-time students:

> These curricular and service changes are often related to each other and to existing demand as much as to anticipated demand. They include short or mini-courses, satellite campuses, relaxed admissions standards, educational brokerage, . . . increased independent study, modular courses, increased use of instructional technology, expanded evening divisions, changes in service hours, expanded financial aid, special facilities and more noncampus colleges.

Schultz (1976) categorized higher education's response to the notion of lifelong learning (and declining enrollment) in terms of: external degrees; academic credit for experience; and services to older people. Houle (1973:87) described an external degree as taking one of three forms: a) the extension degree; b) the adult degree; and, c) the assessment degree. The extension degree was granted to students who completed the traditional program at a time and place accessible to those who, for one reason or another, could not travel to the campus and needed to study on a part-time basis. The adult degree, according to Schultz (1976:8), was developed on the premise that psychologically and socially, adults differed from college youth and required a different type of educational program. The adult degree often differed from traditional degrees in the facets of admission, instruction, and evaluation. Finally, the assessment degree emphasized the demonstration of competency and rationalized that learning rather than course credits and other formal requirements, comprised the basis for awarding the degree. Sosdian and Sharp (1977:23) loosely defined external degree programs as "those emphasizing minimal classroom coursework and minimal resident requirements." They observed in their study that there were 134

accredited or approved organizations, offering 244 external degree programs in 1977.

Ruyle (1973) in a 1972 survey of 1,185 colleges and universities in the United States, reported that institutions of higher education were increasingly awarding academic credit for knowledge and experience formerly considered to be unacceptable for credit. Meyer (1974) estimated that in 1963 fewer than ten institutions were involved in granting credit for non-college learning, whereas in 1974 that number was close to 200. He found that credit was being granted for: a) life or work experience without evaluation; b) demonstrated knowledge, competence or skill from experience; c) analysis of learning gained from a specific type of experience; and d) the synthesis of knowledge gained from experience.

Schultz (1976) categorized university and college services to older people as: residential courses and outreach programs for senior citizens; programs employing retired professionals as resources; and, comprehensive programs of services for senior citizens. Canada has, at the present time, three universities to serve off-campus students on a non-residential basis: Athabasca University in Alberta and Tele-universite in Quebec, and the British Columbia Open Learning Institute. According to Daniel and Smith (1979), 12,000 individuals, widely distributed around the province of Quebec and from diverse backgrounds, participated in one or more of the Tele-universite courses in 1978-1979, while according to Phillips (1979), Athabasca University, with only a few years of experience, had an enrollment of 3,500 students for 1978-1979. Most Canadian Universities provide off-campus credit

instruction of the "extension degree" type described by Houle (1973) and employ correspondence courses, evening classes, intensive summer sessions and instructors travelling to decentralized locations from the university campus.

### Higher Education in Western Canada

Leslie (1980:73-89), in a report commissioned by the Association of Universities and Colleges in Canada in 1976, provided an excellent sketch of higher education for each province in Canada between the time the study was commissioned in 1976 and when it was reported in 1980. The following is a review of the salient features reported in Leslie's description of public universities in western Canada.

British Columbia. Leslie (1980:75) reported that the aggregate full-time enrollment in university transfer programs in British Columbia was about 7,000 in 1976/77; however, the impact of the transfer figures lessens considerably when it is recognized that less than ten percent of the university transfer students completed two years of the transfer program before entering into a university program. Leslie reported that the University of Victoria tended to draw a large proportion of its student body from the Interior of British Columbia--a heavier proportion than was the case for the University of British Columbia or Simon Fraser University.

Winegard's (1976) Report on the Commission on University Programs in Non-Metropolitan Areas, commissioned by the British Columbia government, described the University of British Columbia as the "major professional, graduate and research institution of the Province," which carried a heavy responsibility for extension work in the province. The

same report described the University of Victoria and Simon Fraser University as primarily undergraduate Arts and Science institutions. Leslie (1980:78) hinted at the anguish the image of the "undergraduate Arts and Science institution" created for the two universities when he reported that Simon Fraser University and the University of Victoria:

> . . . regard themselves as having areas of specialization which rival or surpass UBC. They naturally dislike any suggestions that they be restricted to a role which is basically supplementive to that of the larger established provincial university.

Alberta. In 1976 Alberta had three public degree-granting universities in addition to eleven other postsecondary institutions, four of which offered university transfer programs. Leslie (1980:80) described the University of Alberta up until 1966 as:

> . . . the premier educational institution in the province; it occupied a controlling position at the apex of a provincial system of postsecondary education.

The rivalry between the University of Alberta and the other two universities, had, according to Leslie, created a problem of "scale" for the University of Calgary and the University of Lethbridge. He suggested that the rivalry and local "boosterism" was resulting in mounting pressure for the University of Calgary to expand its programming and possibly risk spreading its already "thin" resources, even more thinly. However, it would appear from Leslie's analysis, that it is the University of Lethbridge which could experience the real problems of scale. The University of Lethbridge difficulties or potential difficulties exist because it is not only in direct competition with other postsecondary institutions for "junior college" undergraduate

students, but as a regional university, it faces the uncertainties of possible population mobility.

Saskatchewan. Saskatchewan, as well, became a "victim" of inter-city rivalries, when in 1974, a dual University of Saskatchewan campus structure was abandoned in favor of two autonomous universities. Leslie (1980:86) tried to capture the flavor of the two universities in 1974 when he reported:

> The Saskatoon branch was long-established and relatively large, but conscious that it would have difficulty in maintaining its position relative to the larger universities in Manitoba and Alberta. The Regina branch, on the other hand, was aiming for development, and diversification in order to acquire a position more nearly on par with its former parent.

With the anticipated decline in enrollment for the two Saskatchewan universities during the 1980s of as high as twenty percent, Leslie referred to the prospects of the universities in Saskatchewan as having "darkened" somewhat. Thus, in recent years, while the University of Regina has sought further development, the University of Saskatchewan has argued that considering the small number of prospective students in Saskatchewan, there has been a "need for interprovincial cooperation and for program specialization within a network of prairie, or western, universities" (Leslie:1980:88).

Manitoba. Of the western provinces, Leslie felt that Manitoba was the only province where each university had a clearly defined role which had been accepted by other postsecondary institutions within the province. The University of Manitoba was, until 1967, the sole

degree-granting institution and it is still the province's major university for both study and research.

However, since 1967, the University of Winnipeg and Brandon University have become degree-granting institutions. Brandon University has restricted its role to that of an undergraduate university and is the smallest of the three universities. According to Leslie (1980:89) Brandon University's major offering has been teacher training which, given a teacher surplus and the university's regional orientation, does not auger well for the university's future.

The University of Winnipeg, located in downtown Winnipeg, is affiliated with the University of Manitoba in some of its programs. As perhaps the result of its location, the University of Winnipeg, according to Leslie (1980:88) has had more part-time students than full-time students--a rather unique characteristic for a traditional campus-based university.

In addition to the three universities, the Manitoba Universities Grants Commission has separately funded a consortium of three universities called "Inter-Universities North" which in 1977/78 had, according to Leslie, twenty-one courses with a total enrollment of 406 students at ten locations north of the fifty-third parallel.

## SUMMARY

This briefly reviewed the enrollment crisis facing universities and its relationship to organizational theory as a problem of input control for the organization. It was recognized that universities can, and have

in the past, successfully engaged in marketing activities designed to stem declining enrollments. A second reaction to declining enrollments has been an increased awareness and concern for the pool of qualified prospective students and how universities might enlarge that pool.

Higher education and lifelong learning have been characterized in recent years by a rapid increase in part-time participation--particularly for women. Universities actively recruiting part-time students have undergone changes in their instructional technology to remove some of the barriers to part-time student access. In western Canada, declining enrollments have created new stresses for the public degree granting universities. It would appear that competition between universities and among all postsecondary institutions for prospective students, is becoming a significant dimension in higher education in western Canada.

In the remainder of this report, Chapter 2 reviews the theoretical background, the conceptual framework, and published research related to the study. Chapter 3 reviews the methods and procedures applied to collect, transform, and analyze the study data. Discussion of the study findings is divided between Chapter 4 and Chapter 5 with Chapter 4 confined to a review of the findings related to student participation in the context of the students' geographical orientation prior to enrollment. Chapter 5 contains findings reflecting the relative success with which the six CCS or home area characteristics predicted the full- and part-time participation rates of new students in the various universities investigated in the study. Chapter 6 reviews the research approach taken in the study accompanied by supportive evidence for each conclusion drawn. Chapter 6 closes with a discussion of the implications of the study findings and recommendations for future research.

# CHAPTER 2

# RELATED LITERATURE AND CONCEPTUAL FRAMEWORK

This chapter reviews the theoretical underpinnings for the study which fall into the broad parameters of organizational theory and organizational effectiveness. Following the discussion of relevant theory, is a brief outline of published research related to the research problem under investigation along with the corresponding rationale for the variables selected and incorporated into the research design. The chapter concludes with a discussion of the conceptual framework for the study which illustrates both how the research focus fits within an overall systems model for postsecondary education and the context for the independent variables selected for the study.

## ORGANIZATIONAL THEORY AND ORGANIZATIONAL EFFECTIVENESS

### Organizational Theory

The organizational theory reviewed here focusses on two main areas: a) an examination of the relationship between an organization's external environment, the organization's resources, and inter-organizational competition; and, b) a discussion of theory which describes how an organization relates to its environment.

External environment, organizational resources and competition. It is difficult to separate an organization from its environment, particularly in a relatively open systems model. In his attempt to distinguish between the organization and its boundary, Starbuck's (1976:1070) description illustrated the difficulty analysts have in separating the organization from its external environment:

> An organization displays some of the properties of a cloud or magnetic field. When one is far enough inside it, he can see its characteristics and effects all about him; and when one is far enough outside it, he can see that it comprises a distinctive section of social space. But as he approaches the boundary, the boundary fades into ambiguity and becomes a region of gradual transition that extends from the organization's central core far out into the surrounding space. One can sometimes say, "Now I am inside" or "Now I am outside," but he can never confidently say, "This is the boundary."

It was suggested by Child (1972:9) that administrators distinguish between various organizational environments or markets and tend to priorize them in terms of the allocation of organizational resources. Thus, the linkage or interface between the organization and its environment tends to be perceptual in nature.

Immegart and Pilecki (1973:36) defined a system's environment as "everything which is outside of the system's boundary." They referred to the proximal environment as that part of the environment of which the system is aware and the distal environment as that part of the environment of which the system is unaware. Weinhauer (1979:19) operationally defined the boundary separating an organization from its external environment as "the dimension which provides for making a distinction between members and non-members of an organization," while Pennings and Goodman (1977:154) described the environment of an

organization as consisting of "individuals, groups, and organizations that provide resources for organizational input and that are recipients of organizational output." Finally, Hodge and Anthony (1979:124) described the boundary of the organization as an "intermediate environment" comprised of those units of the organization which surround its technical core. The boundary or intermediate environment thus consists of units which tend to buffer the core technology of the organization from its macro environment (Thompson, 1967:18). This "buffering" involves boundary spanning units which moderate the flow of inputs toward the core from the macro environment in addition to moderating the flow of outputs away from the organization toward its macro environment.

Thus, Hodge and Anthony (1979:541) referred to three categories of environment: macro, intermediate, and micro environments. The macro environment was defined as:

> . . . the network of systems in which organizations exist, composed of culture, political forces, economic forces, technology, skill mixes, and consumer client groups; a source of opportunities and constraints for the organization.

The micro environment included the processes that go on within the organization such as the goal-setting of the organization and the roles that power, authority, delegation and decision-making play in the life of the organization. The intermediate environment comprised of boundary spanning units, separates the two.

Therefore, organizations can be considered to:

1. Have boundaries separating the organization from its environment and distinguishing organizational members from non-members, even

though the precise position of the boundary depends somewhat on the perception of the individual administrator;

2. Have micro (i.e., internal) and macro (i.e., external) environments separated by an intermediate environment which regulates the organization's inputs to and from the macro environment.

Thus, organizations look toward their environments for resources and, as resources become scarce, competition with other organizatons for the same resources sharpens while the organization's linkage with its environment becomes critical. Hence, in the consideration of interorganization competition, the concept of resources is important. Yuchtman and Seashore (1967:900) broadly defined resources as:

> . . . means, or facilities, that are potentially controllable by social organizations and that are potentially useable--however directly--in relationships between the organization and its environment.

Under this definition, prospective students are a form of organizational resource for the university. According to Beder (1978:179), clients are especially important to service agencies, such as universities and schools, because they represent the raw material necessary for organizational survival. The conclusions drawn from the Clark (1968:145-155) study of adult education in California reinforce the notion that client resources are critical, especially when the amount of funding is contingent on the numbers of clients served. Blau (1964:255) distinguished between competitive processes and exchange processes with "competitive processes reflecting endeavors to maximize scarce resources and exchange processes reflecting some form of interdependence." Although Blau also contended that competition occurs only among like

organizations, Yuchtman and Seashore (1967:897) pointed out that "exchange and competition are the extremes of a continuum along which interorganizational transactions can be described."

Thompson and McEwen (1958:23-31) outlined four organizational strategies for dealing with the environment, one of which is competition. The other three are cooperative strategies and involve bargaining, co-optation, and coalition. The stability of the environment, according to Beder (1978:186) will affect competition and cooperation in that stable environments tend to result in a domain consensus (i.e., understanding of which organization will provide service to which clientele). In addition, Beder postulated that competitive environments vary according to the amount of resources available. In lean environments, competition is enhanced whereas in environments where there are resources that are ample but still insufficient to meet all of the organization's needs, resource competition declines and cooperative interorganizational linkages prevail. Beder further hypothesized that when resources are abundant, both interorganizational competition and cooperative linkages (for purposes of resource acquisition) will decline.

Consequently, it might be predicted from such theoretical constructs, that as prospective students become even fewer in number and a diminishing resource, those higher education institutions which choose to maintain their teaching role will seek cooperative interorganizatioal linkages with other agencies--but only as a temporary step. As the numbers of students continue to decline, interorganizational cooperation will cease and a highly competitive macro environment will dominate.

Thus competition between universities is a reality and an understanding of the nature of the competition is essential for organizational survival.

Adaptation or control of the environment. The concepts of organization domain, boundary spanning, and task environment are all relevant in an analysis of the environmental interface in higher education. All three help to determine to what degree an organization will adapt to its environment or control its environment.

According to Levine and White (1961:583-701), organizations establish a domain in the environment which consists of the range of products offered, the population served, and the services rendered. Beder (1978:183) defined domain as the "legitimized authority for carrying out programs of a certain kind," while according to Benson (1975), the wider the domain, the greater the legitimate claim on resources. Therefore universities, like other organizations, can be categorized according to their environmental domain and it is the intention of this study to examine the characteristics of their geographic domain.

Brown (1969), Dill (1957), Thompson (1967), Steers (1977), Weinhauer (1979), and Hodge and Anthony (1979) have all referred extensively to task environment in their writings. Weinhauer (1979:19) operationally defined task environment as "including those factors in the environment which make a difference to the organization's survival and growth." Steers (1977:85) however, defined task environment in terms of goal setting activities and as "that portion of the total setting which is relevant for organizational goal setting and goal-directed

activities," while Hodge and Anthony (1979:547) employed Steers' definition for task environment and suggest that it is:

> . . . composed of customers, suppliers of equipment, materials, labor, capital, work space, competitors for both markets and resources, and regulatory groups including government agencies, unions and interfirm organizations.

Clearly, prospective students, as a form of organizational resource, belong to the university environment along with other universities competing from various distances to enroll them.

Boundary spanning involves that portion of the task environment which cuts across the intermediate environment and is embodied in organizational units referred to as boundary spanners. However, not all boundary spanning units are necessarily located in the intermediate environment. Some boundary spanners may be within the organization itself, such as the organization lawyer and the university alumni offices. Hodge and Anthony (1979:126) claimed that two factors have a major bearing on whether or not an organization will internalize its own boundary spanning units: economies of scale (i.e., it is less expensive to spread costs of units over a large number of transactions), and the reduction of uncertainty by obtaining greater control. Thus it might be predicted, against a backdrop of an increasingly uncertain environment, that boundary spanning, as a function in the university organization, will assume greater importance as a vehicle for securing prospective students.

Although there has been a great deal of reporting on organizational boundary spanning activities and functions from both inter and intra organizational perspectives by such researchers as Lynton (1964), Bogue

(1971), Hopkirk (1977), Aiken and Hage (1968), and Frey (1977), it is not the purpose of this review to examine in detail the boundary spanning function, but rather to briefly acknowledge the significant role boundary spanners play in enabling organizations to both adapt to and control their macro environments.

Leavitt, Dill and Eyring (1973:306) described four types of environment interface strategies adopted by organizations and the implications of each:

1. Imperviousness: the withdrawal model. With this linkage strategy, organizations try to seal themselves off from their environments and withdraw.
2. Selective imperviousness. The organization is selective as to the linkage it establishes; only certain areas of the task environment--particularly only those with an immediate effect on the technical core of the organization--are allowed to penetrate, and then only when there is vital information or resources for the organization's well-being. Thus, the function of the boundary spanning units in the selective imperviousness category is to buffer and insulate the organization (Thompson, 1967) and therefore play a minor role in information and resource transmission. Larger organizations (i.e., many well-established universities) with a history of technical stability have adopted this linkage system.
3. Adaptiveness. Organizations employing this strategy use boundary spanners as a linking system which adapts the organization to the environment. The organization changes itself to adapt to as many environmental contingencies as it can.

4. *Action-adaptation*. Under an action-adaptation strategy, the organization is not simply and passively adapting; rather, it also becomes a change agent in the environment. The organization attempts to structure and influence the environment in ways that are favorable to the organization, and boundary spanners tend to assume a more aggressive role in influencing the other relevant systems to change to better "fit" the focal organization or system.

In summary, organizational domain, task environment, and boundary spanning are all important concepts for the analysis of universities attempting to cope with declining enrollments. As the university environment becomes increasingly unstable and the supply of prospective students is threatened, organizational survival depends a great deal on how the organization relates to its environment. Thus, it might be predicted that to stabilize the supply of prospective students, attempts will be made by universities at both adapting to their environmental conditions and controlling their environments.

## Organizational Effectiveness

Four common theoretical approaches to organizational effectiveness are reviewed below, followed by a brief examination of an appropriate theoretical perspective for the approach pursued in this study.

*Four approaches*. M. Hassen (1976:32), in his overview of the literature on organizational effectiveness, reported that there is considerable disagreement on what factors should be measured. Hall (1977:85), in a review of organizational effectiveness, concluded that there were three basic schools of thought: the goal approach, the systems resource approach, and the multiple-criteria approach. These

three approaches, combined with a fourth aspect referred to as a "natural selection" view, will be briefly examined below:

The goal approach was exemplified by Etzioni's (1964:8) definition of effectiveness as "the degree to which (an organization) realizes its goals." Hall (1977:86) cautioned that there are difficulties with the goal approach in that in many organizations there are multiple and conflicting goals. In addition, Hall cited research which demonstrates the importance of knowing who is judging the effectiveness on which goals. Steers (1977:4), in his multi-dimensional perspective of organizational effectiveness, employed the notion of "goal optimization" along with other dimensions. Steers concluded that the major advantage to the goal approach is that organizational success is measured against organizational intentions instead of against an investigator's value judgements (i.e., what an organization "should" be doing). Thus the goal approach can deal with different organizations pursuing widely divergent goals.

Katz and Kahn (1966) used the system resource approach and defined effectiveness in terms of "efficiency" and "political effectiveness." The term efficiency, as used by Katz and Kahn (1966:165) referred to "the ratio of energic outputs to energic inputs."

> Political effectiveness consists in the short run of maximizing the return to the organization by means of advantageous transactions with various outside agencies and groups and with members of the organization as well.

Yuchtman and Seashore (1967:891) in response to Etzioni's (1964) goal approach several years earlier, were highly critical of the goal approach and defined organizational effectiveness in terms of the organization's

"bargaining position, as reflected in the ability of the organization, in either absolute or relative terms, to exploit its environment in the acquisition of scarce and valued resources." Seashore and Yuchtman improved on the Katz and Kahn definition of effectiveness as "political effectiveness" by recognizing the concern of optimal acquisition of resources from the environment rather than maximization. They pointed out that maximizing resource acquisition can lead to a disasterous depletion of environmental resources and harmful effects to the organization. Consequently, they distinguished between "the capability of exploiting the environment and the idea of an optimum point in actually transacting the environment" (Pennings and Goodman, 1977:176).

Pennings and Goodman (1977:148), in their comparison of the system and goal approaches, believed that the two different approaches to organizational effectiveness were founded on different assumptions:

> . . . the systems approach emphasizes functional complementarity among the parts of the organization and stresses the need for maintenance. In contrast, the goal approach sees organizations as rational systems that enable the various parties involved to accomplish certain objectives. Whereas the first approach emphasizes adequate resources and avoidance of undue strain on the system, the second stresses the preferences of interest groups.

Steers (1977:6) proposed a multiple criteria approach. Because of the constraints induced by the organization in its pursuit of its goals, maximum attainment of goals is not possible but optimum attainment is. Thus, Steers' "optimization" approach is able to deal with Hall's concern described earlier, that organizations have multiple and sometimes conflicting goals. Steers provided a further and important modification to the goal approach in his response to what appears to be confusion on

the part of critics to the goal approach (i.e., Yuchtman and Seashore, 1967:891) as to the meaning attached to the "goal" concept. Steers (1977:5) defined organizational effectiveness as "the organization's capacity to acquire and utilize its scarce and valued resources as expeditiously as possible in the pursuit of its operative and operational goals."

Thus, Steers' definition of organizational effectiveness, in terms of "resource acquisition" and "organizational goals" from the perspective of optimizing rather than maximizing goal attainment, has in fact moved the formerly two distinct approaches, together. In addition, Steers included in his approach a behavioral component which emphasizes employee behavior in the long term success of the organization. Consequently, Steers assumed somewhat of a multiple criteria approach to organizational effectiveness.

Pennings and Goodman (1977) presented a conceptual framework of organization effectiveness which tended to combine the system and goal approaches. It combined the Katz and Kahn (1966) "systems" approach with the Cyert and March (1963) "goal" approach and used Thompson's (1967) strategy of combining open system notions of organizations with the assumptions that different groups are in a political arena and concerned with promoting their own self interests.

A fourth approach to organizational effectiveness briefly reviewed by Perrow (1979) and more extensively by Aldrich and Pfeffer (1976), is the natural selection model of evolutionary theory. According to Aldrich and Pfeffer (1976:9):

> The model is not intended to account for short-run organizational changes, which are temporary responses to local conditions, but rather for long-run transformations in the form of elements being examined.

Thus, organizations over a period of time are selectd to survive due to their "fitness" with the environment.

Therefore, the selection process assumes perfect competition and organizaional failures eliminate the "less fit." However, perhaps the greatest criticism of the natural selection model for educational organizations is that perfect competition does not exist, with primarily publicly funded educational agencies in North America. Because they are publicly funded, educational agencies are somewhat protected from failure.

An appropriate definition. It seems important to note that an emphasis on a systems approach suggests that input acquisition behavior assumes a relationship between input acquisition and the goals of the organization. Yuchtman and Seashore's (1967) modification of the Katz and Kahn organizational effectiveness definition, which proposed optimization of resource acquisition rather than maximization, reinforced the previous point. To establish optimal levels of input required by the organization, it can be assumed that the organization in question will have employed criteria related to the operative and operational goals of the organization.

Steers (1977:48) himself, in a review of R. Hall, pointed out that:

> . . . "the acquisition of resources does not just happen. It is based on what the organization is trying to achieve--its goal--but it is accomplished through the operative goals." In short, it is argued that the Yuchtman and Seashore model represents an "empirical verification of the operative-goal concept."

It is also noteworthy that input acquisition behavior, must at least chronologically, supercede all other organizational behavior if the organization is to survive. For purposes of this study, it was concluded that the most useful approach to organizational effectiveness, particularly as the supply of new enrollees as "raw material" for the organization becomes insecure and unstable, is the Yuchtman and Seashore (1967) system-resource approach, with their focus on input acquisition behavior under the constraints of optimization rather than maximization.

## RELATED RESEARCH AND RATIONALE

This section reviews past research and relevant discussion related to the focus of this study. The section is divided into eight parts, the first of which briefly reviews the gravitation model for human interaction over distance followed by a discussion of literature related to home area variables under the headings of: Distance, Socio-Economic Status, Family Size, Home Area Education Level, Employment Activity, and Age of the Prospective Student Population. The section concludes with a review of the rationale for differentiating between part- and full-time students.

### The Gravitational Model

During the 1950s a great deal of attention was paid by social scientists and city planners to the so-called gravity and potential concepts of human interaction. In an extensive review of the literature up to 1956, Carrothers (1956:94) described the general gravity concept of human interaction as postulating that:

> . . . an attracting force of interaction between two areas of human activity is created by the population masses of the two areas, and a friction against interaction is caused by the intervening space over which the interaction must take place. That is, interaction between two centers of population concentration varies directly with the function of the population size of the two centers and inversely with the distance beween them.

Over the 1940s and 1950s the concept was developed and applied with some success by urban planners attempting to predict inter-city mobility (Carroll, 1955). Others tested and applied the formulation of the gravity concept by empirically measuring the energy of interaction between pairs of cities using a variety of characteristics such as telephone calls, bus passenger movements, newspaper circulation, and so on (Anderson, 1955; Boland, 1948; Cavanaugh, 1950; Chandler, 1948; Folger, 1953; and Strodtbeck, 1950). More recently, the gravity formulations have been used by market location specialists to estimate market potential for goods distributed from various locations in a geographical area to determine the optimum location for a distribution centre (Harris, 1954; Ray, 1965).

More recently still, Gossman, et al. (1967) employed a form of the gravitational model in their study of the migration of college and university students in the United States, from one state to another, while McConnell (1965) applied a variation of the "potential" gravity formulation to the county residence of Ohio undergraduate students at Bowling Green University. After applying the "potential" model to university enrollment, McConnel (1965:31) concluded that:

> Enrollments for counties located nearer other large public and private universities than they are to Bowling Green, and those furthest from Bowling Green are, in general, over-predicted. Those counties located nearer to Bowling Green than to other

> universities, those with the largest populations, and those having the highest per capita income are generally areas of under estimation.

McConnell used the formula: ${}_jM_i = P_i / D_{j-i}$ where: ${}_jM_i$ was the migration potential from location i to the university at j and thus the predicted enrollment; $P_i$ was the total population at i; and $D_{j-i}$ was the distance between location i and the campus at j. In his study, McConnell tried out various forms of the potential model--some with distance exponents of 1 and 2 and others replacing $P_i$ with an aggregate measure of per capital income from the product of $P_i$ and the per capita income for the county.

Although the earlier market location analysts (Harris, 1954; Ray, 1954) employed data aggregations based on distance intervals surrounding the centre at the receiving end of the migration, McConnell (1965) and Gossman (1967) employed data aggregation based on regions. Gossman, in his U.S. study, aggregated data at the state level using a point at the population centre of gravity to identify the state location for his distance calculations. McConnell, in his study of the single state of Ohio, used the state counties as the aggregation area and, as in the Gossman procedure, McConnell identified the location of the county for the purpose of distance calculations by placing a point at the estimated population centre of gravity for the county.

The present study employed a procedure similar in many respects to the Gossman and McConnell procedures for data aggregation, only this study employed census consolidated subdivision (CCS areas) defined by Statistics Canada for the 1976 census. The CCS aggregation was used to permit an analysis of the relative predictive power of the six

independent variables or home area measures. However, also used in this study was the distance interval aggregation around the university centre similar in many respects to the methods used by the market location researchers, Ray (1965) and Harris (1954). The latter procedure was used to determine the relative distance effectiveness of the nine universities.

### Distance

Research related to factors influencing university and college enrollment received significant attention in the United States during the late 1960s and throughout the seventies. Although there has been a substantial interest in isolating factors influencing student enrollment, many studies have treated student proximity to the university or the distance factor as a single independent influence (Anderson, Bowman and Tinto, 1972:21). Thus, it would appear that little effort has been made to investigate the relationship between factors thought to relate to enrollment and the distance separating the prospective student from the institution.

A noteworthy exception to the latter is the Anderson, et al. (1972) study conducted for the Carnegie Commission on Higher Education. The study concluded that students' ability and socio-economic status were more important to college enrollment than geographic proximity. The study limited its handling of the enrollment-distance phenomenon to a college-community versus non-college community dichotomy. The question asked was: "What are the differences between the students attending colleges in their own community and those attending colleges outside of their own community in spite of the presence of local colleges?"

In a study of pricing policy and the college choice process involving admitted freshman applicants to Carnegie-Mellon University, Chapman (1979:54) observed that:

> . . . distance seems to be irrelevant to the college choice process. This of course does not rule out distance being an important factor in a student's application set formation decision. However, once a student has applied to a set of colleges, these empirical results would suggest that distance is no longer a factor in the choice process.

Carnegie-Mellon is a private school located in Pittsburgh, Pensylvania--a densely populated area with a variety of college options open to prospective students. The context of Chapman's study contrasts with the public universities dominating higher education in western Canada. The public universities in western Canada are surrounded geographically by home areas of low population density while private colleges play only a minor role in terms of the numbers of students enrolled.

Weiser (1977), in an analysis of community enrollment patterns in the Los Angeles Community College district, mapped the proportion of the population enrolled in college credit courses for each community in the area. Weiser concluded that geographic location was a major factor influencing enrollment and observed that community participation rates and distance travelled to the campus were inversely related. Harnqvist (1978:61) reported on a Swedish study conducted by E. Holm and N. Haggestrom (1972) of university student enrollment data for 1962-1963, 1966-1967, and 1969-1970, which observed that a doubling of distance from homes to an institution of higher education meant a decrease in likelihood of participation by thirty percent. Harnqvist concluded that students who were "marginal choosers" in other respects were influenced

by physical distances. In addition, Miller (1977) concluded from his study that one of the major factors influencing minority student enrollment was geographic location. Munday (1976), after contrasting college access for traditional and non-traditional students, concurred with Miller that non-traditional students focussed on proximity as a major criterion for enrollment decisions.

Other studies concluding that distance was a significant consideration with respect to university enrollments, include: a follow-up study by Beckman (1977) of Manitoba grade twelve students who expressed an interest to attend a postsecondary institution and subsequently failed to do so; a study of community college transfer students in New York State (Fairweather, 1979); and a telephone survey of "no-shows" after admission at Maryland State University (Grites and Teague, 1978).

Gossman, et al. (1967:165) observed that when plotting the percentage of the migrating students in the United States against the distance they migrated:

1. That undergraduates attending large public institutions were more influenced by distance than undergraduates attending private institutions or graduate students;
2. That graduate students were the most mobile and influenced the least by distance;
3. That undergraduates migrating to private institutions, showed regional differences in their willingness to travel.

Thus, although there is some dispute as to what other factors are masked with distance in enrollment-distance studies, and which parts of

the enrollment decision-making process distance influences, there is sufficient evidence in the research literature to encourage continuing research of geographic distance within the context of other factors.

Socio-Economic Status

The cost of education has been a frequently cited factor influencing enrollment, particularly in the United States where in-State and out-of-State tuitions vary widely and the subject of financial aid programs for students has been widely debated. Feldmann (1972) cited price along with parental education and occupation, neighborhood, and the student's perception of his own ability as influencing college choice, but Stark (1976:63) suggested that "depending on the student's family circumstances, the choice may be rationalized first and foremost on financial grounds." Grites and Teague (1978) concluded that in addition to distance, tuition, and other factors were important as to which university students attended once they had been admitted. Huddleston and Wiebe (1978) reviewed a study of the Bradley University student market, and cost considerations were viewed by accepted applicants to be approximately as important as distance. G. Jackson (1078:557), in a study of a subsample of the National Longitudinal Study involving the high school class of 1972, observed that factors such as student socio-economic background and academic achievement influence student achievement and aspirations early in life and that financial aid simply influences an aspiring college student as to which college he selects:

> These statistics suggest that neither financial aid nor other college attributes or actions have much power to change students' minds. This is not to say that colleges' actions or attributes are unimportant. Rather, they may affect students'

> selection among colleges rather than their decision whether to enroll, or may act in concert with other influences.

Other studies which found support for family income as a factor in enrollment include: the study by Anderson, et al. (1972) reviewed earlier; findings by Munday (1976) that not only proximity, but low university tuition influenced college choice among non-traditional students, with non-traditional students having a lower family income than traditional students; and Suter's (1977) survey of college participation rates for eighteen to twenty-four year olds by level of income, which concluded that attributes associated with family income level along with the ability to complete high school determined college attendance.

In this study several measures of socio-economic status for the new university enrollees' home areas were examined. Although average family income was not available for the 1976 census data, it was observed for the 1971 census data. Thus the average family income *of the student's home area* five years prior to his or her registering at a university, became the income measure for the study. Other measures used which were likely to correlate with the average family income, were percentage of prospective students unemployed in the area, and the percentage of the population in the area over the age of fifteen having attended university prior to June, 1976.

### Family Size

Beckman's (1977) Manitoba study of high school students who reversed their decisions to attend postsecondary institutions reported that non-participants came from larger than the average families based on provincial population statistics. Of the non-participants, only 17.8

percent came from families with fewer than two children while the provincial proportion of families with fewer than two children was 39.9 percent; furthermore, while the provincial population proportion of families with four children or more was 11.4 percent, 38.3 percent of the non-participants came from families of greater than four children.

Rowse (1978), in a study of college participation in New York State, Mare (1977) in a study of white American males, and Backman (1978), in an eight year longitudinal study, all concluded that the number of siblings (as represented by family size) was inversely related to enrollment in universities and colleges.

This study differed from the earlier studies in that whereas they, like most of the past research reported in the area, treated the individual student as the basic unit of analysis this study used measures of the student's community defined operationally as his or her home or CCS area. However, the reported relationship between student family size and the student's decision to enroll found in past studies, provided impetus for this study to examine the relationship between the average family size in each of the home areas and the numbers of students enrolled from the areas.

### Home Area Education Level

Keoyote (1971) concluded that the findings in his study supported similar findings in the literature, that father's education and mother's education along with parental income were closely related to students' educational aspirations. Beckman's (1977) study of non-participants found that there was a significantly higher proportion of non-participants with fathers having less than a grade twelve education

than the average for the province. In addition, Rowse's (1978) study of college participation rates in New York State also concluded that family educational background influenced college participation, while Mare (1977) reported from his study of students moving through the various educational levels that both father and mother education levels influenced the proportion of students deciding to go to college.

Again, although this study was designed to examine the new enrollee's home area, evidence reported which supports the positive relationship between parental education and student enrollment decisions prompted the examination of home area education level. The measure of home area education level used here was the percentage of individuals in the area over the age of fifteen having previously registered for university credit courses.

### Employment Activity

A study of enrollment trends for Michigan higher education, conducted by Agor (1978), examined college enrollment trends in baccalaureate programs for the period 1964-1976 and predicted that as unemployment in the state of Michigan increased, enrollment in universities and colleges also increased. Stewart and Avery (1978), in a study of college enrollments in response to unemployment and income fluctuations, concluded that changes in unemployment rates for a region serve as a better explanatory variable for changes in public college enrollments, than does disposable income.

Thus high employment as a measure of socio-economic status for a particular region, may indicate a high level of disposable income which in turn suggests that students might enroll who would not otherwise

enroll. However, Agor's observation of the opposite, infers that under certain conditions, under-employment in a region may provide the prospective student with the time to attend university or the incentive to use the university as a "springboard" to a new career. Consequently, the percentage of prospective students unemployed in the home areas were examined to determine how well they served as predictors of enrollment from the area.

### Age of the Prospective Student

In a review of some characteristics of postsecondary students in Canada, the Canadian Secretary of State (1976:5) observed that:

> Enrollment in post-secondary institutions has increased dramatically since 1960. The full-time participation rate, which is defined as the ratio of full-time post-secondary enrollment to the population aged from 18 to 24, increased from just under 10 per cent in 1960 to nearly 19 per cent in 1973.

However, the decline in fertility rate documented by Clark, et al. (1979:19) is leading to an aging population. Consequently, colleges and universities are more aware of the need to re-examine the make-up of their student populations. The Canadian Secretary of State Office (1976:5) also observed the growing popularity of part-time studies compared to full-time studies:

> The growing popularity of part-time studies--especially for older persons--suggests that the participation rate (which is defined as the ratio of the sum of full-time and part-time enrollment to the population aged 18-24) has increased even more rapidly.

Eddy (1978:4), in a review of the part-time student research, concluded that institutions and government agencies will have to recognize the changing student population in higher education:

> . . . the audience for higher education will never again be the relatively homogeneous cohort of 18-year olds, but is now the entire population and the educational interest of this population has been greatly underestimated.

Thus, one of the manifestations of the above is an increasing part-time population of adult learners reported by Eddy (1978), and age does not appear to be the barrier to participation in higher education it once was.

Therefore, the effect of the age of the prospective students in the home areas was taken into consideration by employing the percentage of prospective students under the age of twenty-five as a measure of the age of the prospective students. The latter was then evaluated to determine how useful it was as a predictor of enrollment.

### Full-time/Part-time Enrollment Differentiation

As full-time enrollments decline, universities are turning their attention toward the prospective part-time student. To attract greater numbers of part-time students, universities and colleges are altering their organizational technology to better meet the specialized "access" needs of their part-time clientele (Eddy, 1978; Schultz, 1976).

Part-time student technology often simply involves re-scheduling on-campus classes to permit part-time students a greater degree of access. However, four universities specializing in part-time technology for delivering education off-campus, include the Open University in Britain, Athabasca University in Alberta, the British Columbia Open Learning Institute, and Tele-universite in Quebec. Each of these is dedicated to not only employing part-time technology but actively developing alternative forms of technology for more effectively meeting the needs of the part-time student at some distance from the campus. A

rapid escalation in their enrollments in recent years (Phillips, 1979; Daniel and Smith, 1979) is a testimony to their success.

Thus, distance, in addition to other access concerns for part-time students, is considered to be crucial in the development of part-time technology. This study separated the analysis of part-time enrollments from the analysis of full-time enrollments to permit the observations of similarities and differences between the two.

## CONCEPTUAL FRAMEWORK

James Thompson (1967:19) in his analysis of organizational rationality, described organizational rationality as including an organizational concern for inputs and outputs existing outside of the organization's core technology:

> At a minimum, then, organizational rationality involves three major component activities: 1) input activities, 2) technological activities, and 3) output activities. Since these are interdependent, organizational rationality requires that they be appropriately geared to one another. The input acquired must be within the scope of the technology and it must be within the capacity of the organization to dispose of the technological production.

Thompson described how surviving organizations initiate action to meet the requirements imposed by a fluctuating, unstable environment by taking one of, or a combination of, the following courses of action:

1. Organizations establish buffers to ensure a secure and continuous source of input such as a university's concern for a healthy secondary school system and healthy two year college programs to ensure a continuous supply of prospective students capable of

meeting the university's admission standards or core technology requirements.

2. Organizations attempt to smooth out the input transactions to minimize over-supply and undersupply of inputs which impose a strain on the organization's core technology. Just as universities tend to establish rigorous admission standards when there is an over-demand for student places within a certain faculty, universities also tend to relax admission standards somewhat as their student enrollments drop.
3. Organizations attempt to forecast environmental fluctuations and subsequent changes in the supply in input to permit the organization to adjust and adapt to them.

Finally, Thompson suggested that the only alternative for organizations wishing to survive but unable to "buffer," "smooth," or "forecast," is rationing. In the case of a university, rationing at a time of declining enrollment implies the prudent distribution of scarce budget and staff among the various faculties. Thus, healthy organizations in fluctuating environments such as in times of declining university enrollments, are concerned with ensuring a continuous, uninterrupted supply of students and consequently budget resources.

Figure 1 illustrates a systems model for postsecondary education which displays the focus of this study in the context of the overall institution. The model portrays only three of the numerous, interconnected subsystems with micro, intermediate, and macro environments. The three subsystems thus illustrated are:

1. The prospective student subsystem which concerns itself with the input supply of new students to the university. The prospective student subsystem involves the preparation or production of prospective students capable of and interested in meeting the university admission requirement--thus potential candidates for admission to a university faculty as new enrollees. It is this subsystem which was the focus of this study.
2. The instructional process subsystem which carries out the technological activities of the university organization, such as teaching, research and public service. When performing the teaching function, universities apply the appropriate technology to transform new enrollees into graduates.
3. The utilization subsystem which concerns itself with what happens to the university organization's output, for it is assumed that graduates have a different utility than new enrollees. The utilization subsystem applies the graduates' skills, knowledge, and attitudes as its technology, to accomplish specific tasks.

In this model, the intermediate environment contains three processes serving as feedback loops to interconnect the three subsystems. The utilization subsystem provides feedback to both the core technology or instructional process subsystem and the prospective student or input subsystem as to the utility of the organization. A third process in the form of a feedback loop is shown to carry information from the instructional process subsystem to the prospective student subsystem.This loop represents institutional activity in the community designed to organize and develop the prospective student body to meet the

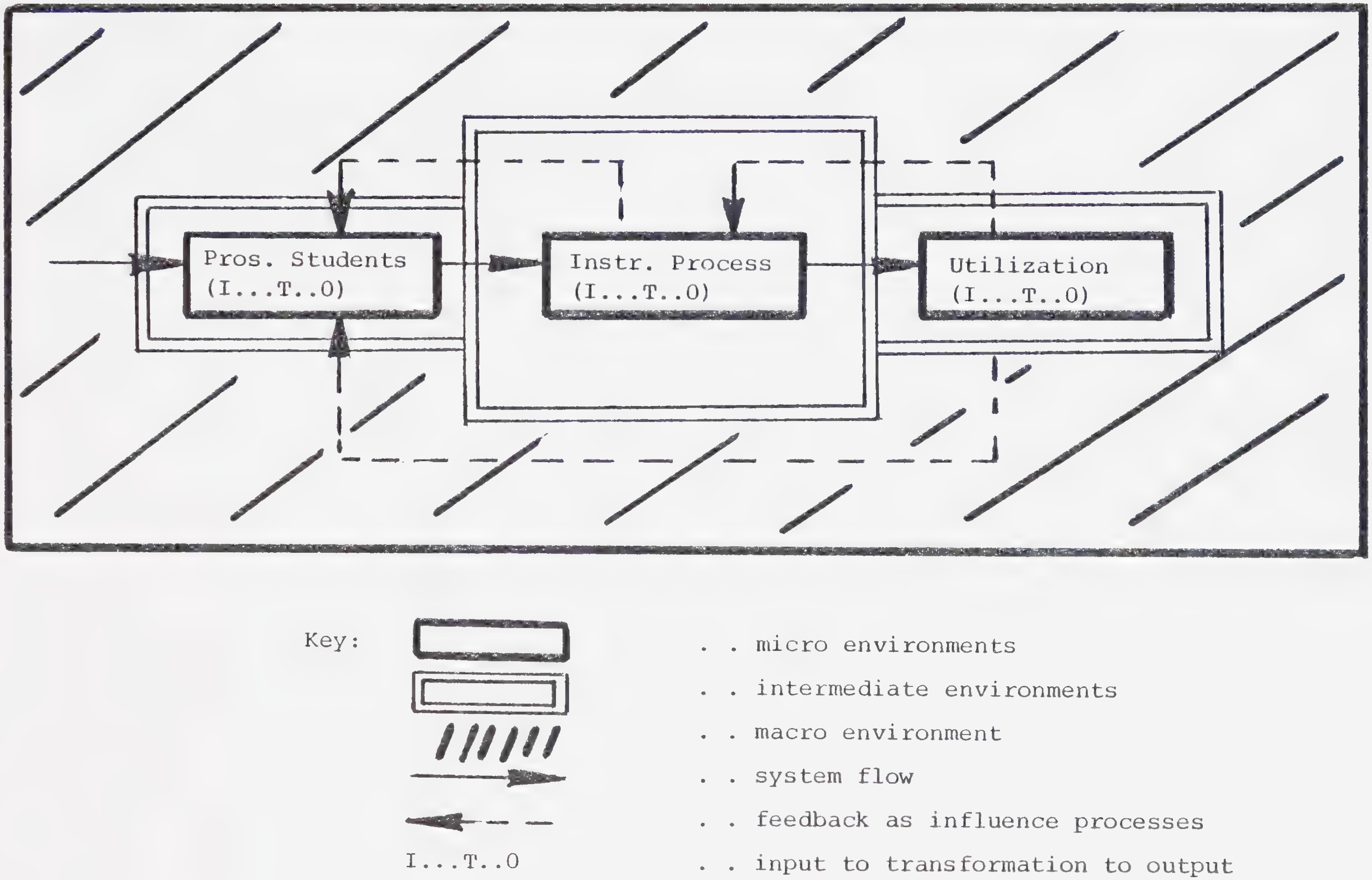

Figure I Systems Model for a Postsecondary Institution

requirements of the university's core technology reflected in university admission standards. Examples of such activity include the university's influence through course information, advertising, and other recruitment procedures, or less directly through interorganizational linkages with the grade level educational system to influence such areas as curriculum decisions, teacher training, and financial aid for students.

Figure 2 diagramatically represents three broad groups of measures which may predict university participation rates: individual measures, institutional measures, and home area measures. This study focussed on the latter, summarized as follows:

1. The distance separating the prospective students' home areas from the university;
2. The percentage of prospective students unemployed;
3. The percentage of prospective students in the home area under the age of twenty-five;
4. The average family income for the home area (five years earlier);
5. The average family size for the home area (of families with one or more children at home);
6. The percentage of the population living in the home area over the age of fifteen who have attended university.

Within the context of both figures 1 and 2, the focus of this study was on the prospective student subsystem, the degree of success the nine universities studied had with the subsystem, and the relative impact of distance and the five other home area measures illustrated in Figure 2, on the prospective student subsystem.

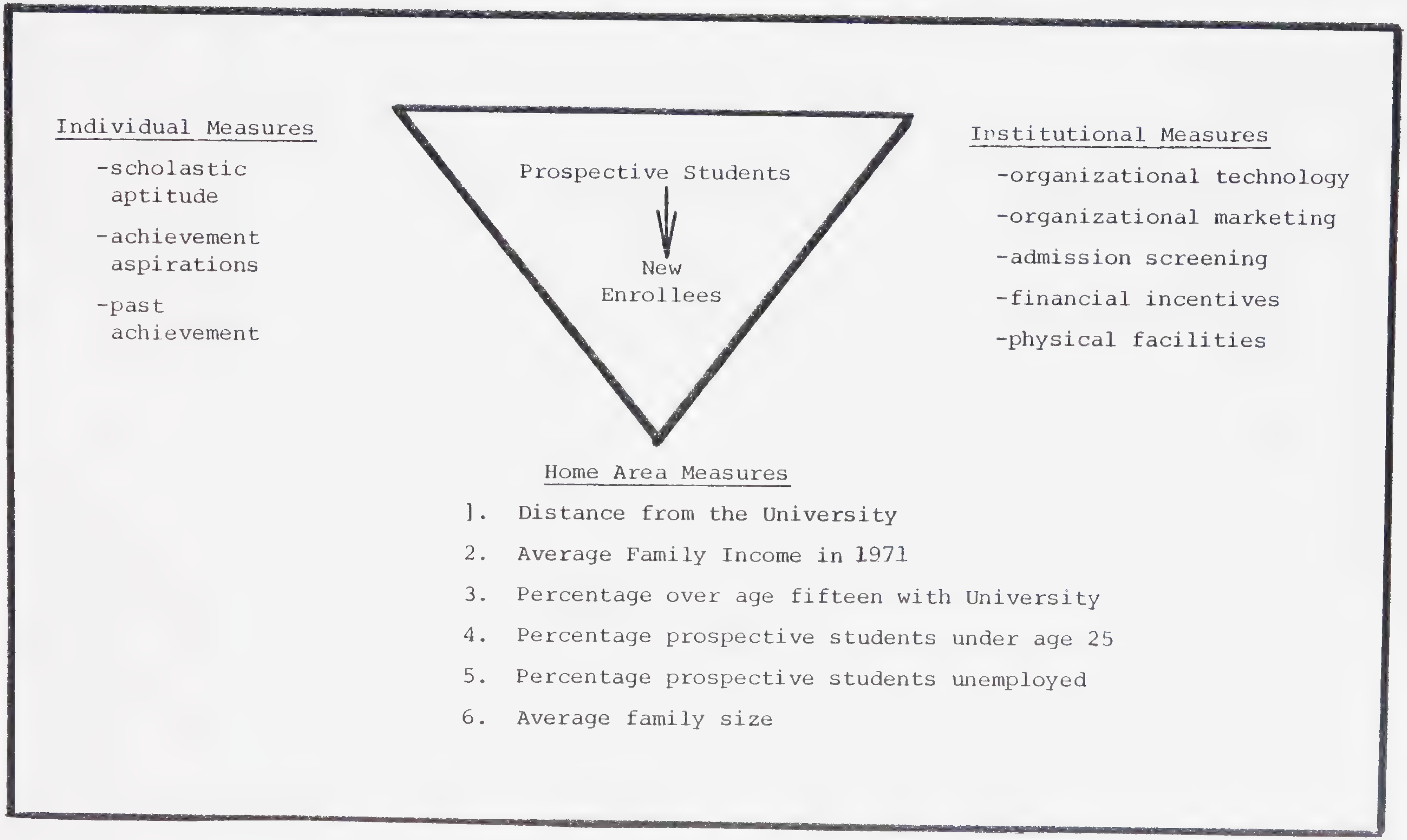
Individual Measures
-scholastic aptitude
-achievement aspirations
-past achievement
Prospective Students
New Enrollees
Institutional Measures
-organizational technology
-organizational marketing
-admission screening
-financial incentives
-physical facilities
Home Area Measures
1. Distance from the University
2. Average Family Income in 1971
3. Percentage over age fifteen with University
4. Percentage prospective students under age 25
5. Percentage prospective students unemployed
6. Average family size

Figure 2 Some Potential Predictors of University Participation

# SUMMARY

The theoretical base for the study rested within the areas of organizational theory and organizational effectiveness. Theoretical formulations describing the relationship between the organization and its environment, the securing of scarce resources, and the subsequent interorganizational competition for scarce resources were all relevant to the research problem. Four approaches to organizational effectiveness which dominate the literature are: the goal approach; the system-resource approach; the multiple criteria approach; and the natural selection approach. The approach to organizational effectiveness employed in this study was the Yuchtman and Seashore (1967) system-resource approach which focussed on input acquisition behavior under the constraints of optimization rather than maximization.

Published research related to the study problem was briefly reviewed for each of the independent variables. Although reported research generally recognized the role of distance as a factor involved in prospective student decision-making, some research suggested that under certain conditions, distance did not appear to be a major factor.

Research reported also indicated that there was some evidence supporting the influence of family income, parental education level, and family size on prospective student decision-making either as to whether or not to attend college or in the choice between institutions. The relationship between unemployment or employment activity and university participation was not as clearly defined in the literature reported. However, recent studies reporting that university students of the future

will be older, prompted the consideration of age in this study whereas the recent development of specialized part-time student instructional technology resulted in this study differentiating between part-time and full-time participation. As noted earlier, the related research reviewed, was based on the student as the unit of analysis, while this study employed measurements based on the home areas rather than individual students.

A brief review of the gravity model of human interaction was presented. The model, which has been investigated by geographers and market location specialists and applied by urban planners to predict inter-city mobility, has also been applied to university enrollments at various distances from the university. According to the model, university participation rates are inversely proportional to either the distance from the university or the square of the distance from the university. Thus the decline in participation over distance from the university could be represented by a curve with an exponent for distance which ranges from -1 to -2.

The conceptual framework identified the focus of this study as the pre-entry subsystem in a system model for postsecondary institutions. The pre-entry subsystem included the process of transforming prospective students into new enrollees in the university. Factors thought to be involved in the transformation process which may serve as predictors of university participation, were categorized as individual measures, institutional measures, and home area measures. The home area measures which were of particular interest to this study, were the geographic distance separating the prospective students' home areas from the

university and five secondary home area measures which were as follows: the percentage of prospective students unemployed; the percentage of the prospective students in the home area under the age of twenty-five; the average family income for the area five years earlier; the average family size of families with one or more children at home; and the percentage of the population living in the home areas who were over the age of fifteen and who had previously attended university.

# CHAPTER 3

# METHODOLOGY

This chapter reviews the methods and procedures applied to collect, transform, and analyze the study data. It has been divided into the following six sections: The Population; Data Collection; Address Revision Error; Generation of the Dependent Variable Data; Generation of the Independent Variable Data; and Treatment of the Data.

## The Population

The basic units of analysis and hence the population for this study, were the CCS or home areas of the new enrollees at nine of the eleven degree granting universities in western Canada. The universities included: the University of Victoria, the University of British Columbia, the University of Alberta, the University of Calgary, the University of Lethbridge, the University of Regina, the University of Saskatchewan, the University of Manitoba, and Brandon University. However, the population was delimited in that it involved undergraduate students born in Canada who had registered with one of the nine universities for the first time between May 1, 1976 and May 1, 1977. The population was further delimited to include only those students who declared their faculty at the time of registration as Arts, Science, Arts and Science, or Education. All universities had four year faculties of Education and faculties offering either three or four year baccalaureate degrees in Science, Arts, or Arts and Science. In addition, all nine

universities offered their programs to both part- and full-time students as defined by criteria acceptable to the Canada Student Loan Plan.

Because of the nature of the data involved, there was little to be gained from sampling the population. Therefore, the study involved data collected for the population as it was defined above.

## Data Collection

The data collection procedure for the study was comprised of three stages. First, a preliminary contact was made with all universities by telephone to discuss the proposed research. Initially, contact was made with individuals charged with institutional research for the university. In some instances, referrals were made to admission officers or university registrars. Besides extensive telephone contact at this stage, there was considerable correspondence and, in most instances, meetings between the researcher and the various university contact people. The objectives of the preliminary contact were to establish:

1. for the university, the purpose and nature of the research to be conducted;
2. for the researcher, the accessibility of the data and the request format most suitable for each university; and,
3. for the researcher, a commitment by the university to provide the study data.

Secondly, after preliminary contact was made with the universities, an official request was made to the university through the established contact. The request specified the optimum format for the data and asked that the data be supplied on magnetic tape or cards ready for computer processing and accompanied by appropriate coding and documentation.

Subsequently, with the exception of Brandon University and the University of Calgary, the data were received on magnetic tape in a variety of formats. Brandon University data for the study period, had not been put on magnetic tape; however, the university was able to provide copies of registration forms which maintained student anonymity. The University of Calgary adhered to university policy which dictated that the student raw data be processed before being released. This was carried out by the university's office of institutional research according to specifications defined by the researcher. Thus, University of Calgary data were received as aggregated frequencies coded for student origin.

Thirdly, a number of universities simply coded out-of-province students by their province of origin at the time the data were stored, while others provided data with up-dated addresses. Consequently, the third stage in the data collection involved a request for manual searches of the "application for admission" records or the original registration forms to locate the original addresses of:

1. those students that originated from outside of the province; and,
2. those students who attended universities that provided data with up-dated permanent addresses and were identified through a random sampling procedure.

The latter of the two searches was conducted to permit an assessment of the seriousness of the address revision error in the data from two universities. The next section discusses in detail the nature and extent of the address revision error.

## The Address Revision Error

In six of the nine universities studied, the addresses or points of origin provided for students were taken from historical files, or in the

case of Brandon University, supplied on the original registration forms. As such, the addresses were the addresses used by the students at the time they either applied for admission to the university or formally registered for the first time. However, for the University of Lethbridge, the University of Manitoba, and the University of Regina, the student's permanent address was maintained on magnetic tape in such a fashion as to be up-dated whenever the student notified the university that a change in address had taken place. Consequently, student address changes since first registration in 1976 or 1977 should have been incorporated into the address file. It was anticipated that the error thus introduced would favor higher enrollments for the university centres as students moved into the cities to attend university.

To provide an indication of the extent of the error, small random samples of 60 students for the University of Lethbridge and 200 for the University of Manitoba were drawn and submitted to the respective universities for an assessment of their accuracy through a manual search of the "application for admission" files or the initial registration forms.

In the case of the University of Regina, the data were also supplied in an up-dated form. However, the data provided, also included the location of the last high school attended and the year attended. As relatively small numbers were involved, the following procedure was implemented to obtain accurate data:

1. If the date of the last high school attended was 1974, 1975, or 1976, the high school address and the student's address were compared, and if they were the same, it was assumed that the

student's address had not changed between graduation from high school and his or her registration at the university;

2. If the above procedure resulted in two different locations, the University of Regina was asked to manually check their files and record the student's original address;
3. If the student had been out of high school more than two years prior to his or her university registration in 1976, the University of Regina was also asked to provide the student's original address.

Consequently, the revised University of Regina data were ultimately assumed to be sufficiently accurate to allow the university to be considered as one of the universities where address data _had not been up-dated_.

For the other two universities involved, the address revision error was minor and, as expected, the error was distributed such that the numbers of students found to be originating from the university centres were slightly higher than they actually were.

A random sample of 60 from the University of Lethbridge population used for the study yielded two changes of addresses representing an address revision error of 3.3 percent, while a random sample of 200 for the University of Manitoba resulted in 199 being searched and an address shift in sixteen of the addresses or an 8.0 percent address revision error.

Since the address revision errors for the University of Lethbridge and the University of Manitoba were relatively minor, no attempt was made to adjust the results to compensate for the error. However, most of the error that did exist occurred as expected, with the university centre

participation rates slightly higher than they actually were and the participation rates in the outlying areas slightly lower than they actually were.

## Generation of the Dependent Variable Data

The dependent variable for the study was defined as the number of part- and full-time students enrolled at each of the nine universities in the faculties of Arts, Science, Art and Science, and Education. The first step in the data transformation involved eliminating students from the data who did not meet the parameters defined for the population at the onset of the study. The second step, involved a re-organization of the data from individual student files to aggregated frequencies around home area units or census consolidated subdivision (CCS) areas used in the 1976 census. In summary then, the data transformation steps involved in preparing the dependent variable data were as follows:

1. The elimination of all students not born in Canada and not in the relevant faculties;
2. The preparation of frequency tabulations of the part- and full-time students for the various places of origin through either the use of town and city names or postal codes;
3. The coding of the part- and full-time frequency data by origin, university, faculty, and province. The origin was tied to the 1976 Census and employed two codes initially--one for the Census Consolidated Subdivisions (CCS) and one for the Census Subdivisions (villages, towns, cities, etc.) which make up the Census Consolidated Subdivisions. The Census Subdivision Codes were only maintained in the early stages of the data transformation to permit

the correction of coding irregularities and errors with relative ease.

4. The compilation of subsequent files for data processing which did not include the Census Subdivision codes but maintained the Census Consolidated Subdivision codes as the points of origin of students.

Consequently, the enrollment data used for analysis were established for each Census Consolidated Subdivision (CCS) area and coded for faculty, part- or full-time status, province of origin, and university in which the students were enrolled. Locations of the CCS areas are illustrated in Figure 3.

### Generation of the Independent Variable Data

The generation of the independent variable data involved four distinct stages: mapping, the calculation of home area to university distances, the preparation of the 1971 census average family income data, and the preparation of the 1976 census data for the remaining five variables. Occasionally, CCS areas in densely populated areas were aggregated. In such instances, the location of the aggregation was assumed to be the location of the CCS area used to identify the new aggregation. A list of the aggregated CCS areas is located in Appendix G.

Mapping. To permit an analysis of the data appropriate for the various facets of the study's first subproblem (parts a and b), it was essential that a method be established to display the university catchment basins for part- and full-time students. Consequently, the data were prepared for computerized mapping through the following steps:

1. Each census consolidated subdivision (CCS) area was located on a large map of western Canada. To permit the identification of a

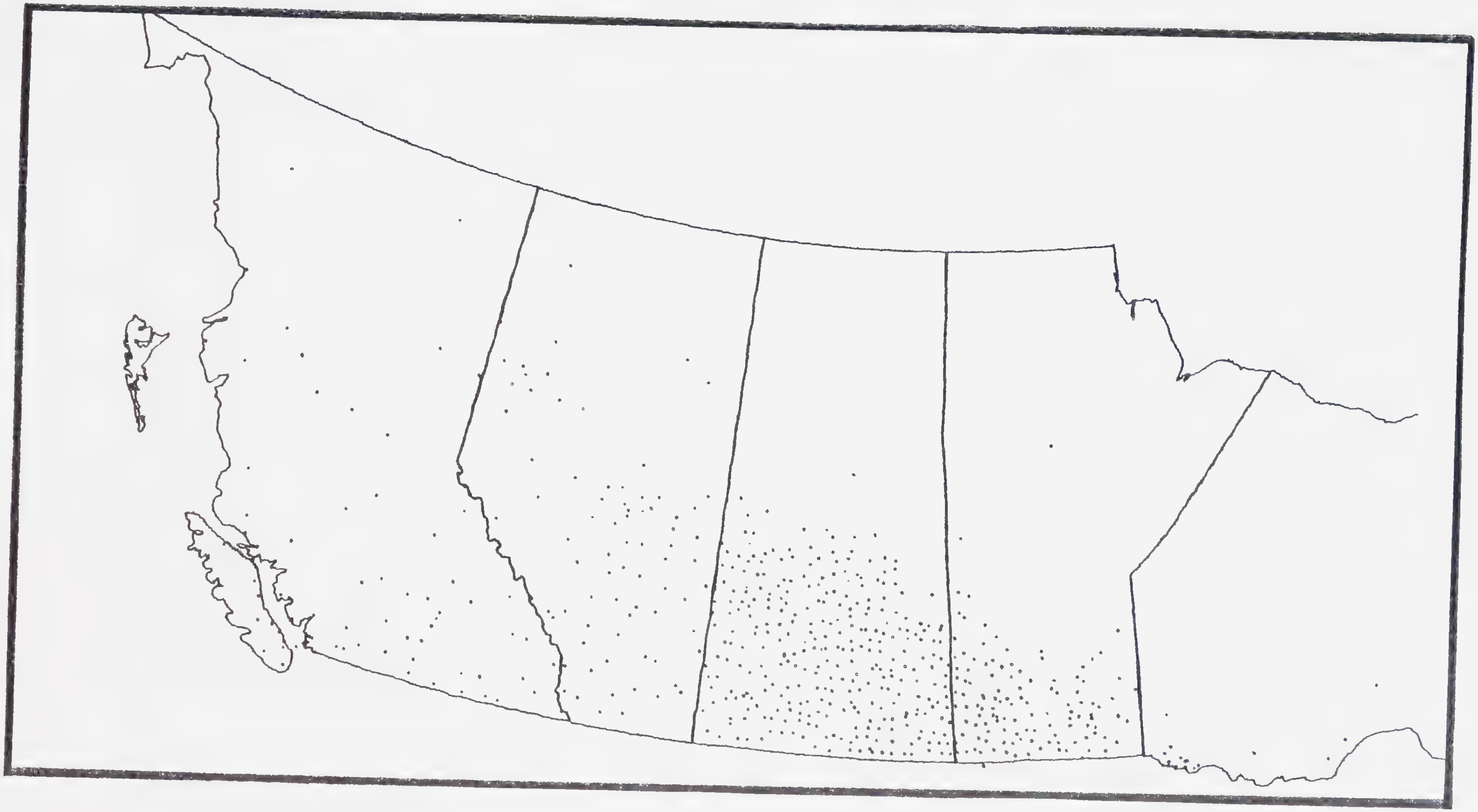

Figure 3 Locations of Census Consolidated Subdivisions(CCS) or Home Areas

precise location, each CCS area was located by a single point placed at the estimated centre of gravity for the population within the CCS area.

2. Using the techniques outlined by Butler and Perry (1974), the CCS point locations were digitized and thus provided with X and Y coordinates to permit subsequent mapping of the points. In addition, the borders of Queen Charlotte Islands, Vancouver Island, the British Columbia mainland, Alberta, Saskatchewan, Manitoba and western Ontario (Census Division 58, 59, and 60) were digitized to permit the borders of the provinces to be mapped along with the CCS or home area locations.
3. Using fortran programs contained in Appendix F, maps were generated which displayed:
    - i) The CCS or home areas shared by more than one university within each province;
    - ii) The CCS or home area origins of students leaving the province to attend University;
    - iii) The CCS or home areas within a province for each university from which no students enrolled.

However, attempts to display the university participation rates from the various CCS or home areas for a particular university using the above Fortran programs, was not successful in that the resulting maps were extremely difficult to analyze. Therefore, the Surface II Graphics System developed by the Kansas Geological Survey and published as a user's manual by R.J. Sampson (1978) was used to produce contour maps displaying

somewhat simplified maps of the catchment basins or contours, which were more easily read and analyzed.

The home area to university distances. Studies reported earlier which examined the relationship of distance to enrollment identified student migration distances by mapping point locations for the home areas as in this study; however, distances in the earlier studies were calculated for each home area by mechanically drawing distance interval circles around the geographical point receiving the migrants and identifying through inspection which home areas were in which distance intervals. The latter procedure was feasible when only a single university or destination was involved and only a few home areas. However, this study, with over 700 CCS or home areas and calculations of distances required from each CCS area to universities within the same province and adjacent provinces, would have been very time consuming and costly if the procedure reported in earlier studies had been followed.

To overcome the problem of calculating the many home area to university distances, a simple Fortran program was used to apply the Pythagoras Theorem to the X and Y coordinates of the two points involved and to calculate the straight line distance between them. Once the data were prepared for computer mapping, not only were the distances calculated quickly and simply, the distance data were in the form of the more flexible continuous data rather than interval data as in the earlier studies.

The 1971 average family income. Past studies of predictors of university enrollment decisions, have placed considerable emphasis on the role of family income in an individual student's decision to go to

university and enroll at a particular university. Unfortunately, the 1976 census did not include data related to family income. However, because of the documented emphasis placed on family income as a predictor of enrollment even though this study involved home area measures rather than individual measures, the 1971 census data were used. This was made possible by the fact that the study involved independent variables which were measures of home areas rather than individual students and their families. Consequently, the 1971 income data provided information related to the average family income of each CCS or home area five years prior to university enrollment of students from the area.

The data were secured from the 1971 census summary magnetic tapes. However, the 1971 summary data were stored by enumeration area and had to be aggregated up to the CCS level. To further complicate the procedure, the geographic coding for the home areas in the 1971 census data differed from the coding used in the 1976 census report. Thus the following procedure was used to prepare the 1971 average income data for analysis:

1. Each enumeration area in the summary tables was assigned a "reference code" which was equivalent to the 1976 CCS code. The aggregated family income for each enumeration area and the number of families in each enumeration area were added to those in other enumeration areas within the same reference code.
2. When an enumeration area did not have a reference code, as in the case of metropolitan areas, the five digit municipal code was used.
3. A translation file was developed which matched the 1971 reference code (for metropolitan areas, the municipal code) with the 1976 CCS codes and thus permitted the 1971 data codes to be translated to 1976 data codes.

4. The income data within the same 1976 CCS codes were then aggregated further until there was a single set of income figures for each CCS code representing each CCS or home area. Subsequently, the average family income for each CCS area could be calculated by dividing the total aggregated income for the area by the total number of families in the area.

Variable data from the 1976 census report. Preparation of the variable data drawn from the 1976 census report was more straight-forward than for the 1971 census data in that no translation was involved and the aggregations occurred from a higher level--the consolidated census subdivision level. Each variable in turn was processed to arrive at a measure representing each CCS or home area. The independent variables for which data was thus generated were:

1. the number of prospective student unemployed;
2. the percentage of individuals in the community over the age of fifteen having attended university;
3. the average number of children per family in the community; and,
4. the percentage of prospective students under the age of twenty-five.

The number of prospective students. Since participation rates for the various home areas were used extensively in the mapping and descriptive analyses, the number of prospective students for each CCS was drawn out of the 1976 census data very early in the research. The procedure was exactly the same as the procedure used for the four variables drawn from the 1976 census report except that by definition, the number of prospective students was arrived at by adding the number of individuals in the home area with secondary certificates to the number of people with postsecondary training but with no university.

## Treatment of the Data

Treatment of the data involved an analysis of:

1. The participation rates for each of the nine universities;
2. The relative distance effectiveness of the nine universities;
3. The appropriatness of the gravity model for each of the nine universities; and,
4. The relative success with which distance and each of the five remaining home area variables predicted enrollment from the home area.

Firstly, the analysis of university participation rates involved extensive thematic mapping for each university studied. Separate contour maps were prepared for both full- and part-time students for each university, to illustrate the relationship between participation rates and geographical location relative to the university and to permit a comparison a) between universities, and b) within each university for the full- and part-time participation rates. In addition, normal descriptive statistics were prepared to describe the participation rates for each university.

Secondly, the relative distance effectiveness of the nine universities was investigated through examination of: 1) data aggregated into unequal distance intervals approximating convenient travel times; 2) an analysis of the no-response CCS areas for each university; and 3) an analysis of the shared CCS areas for universities within the province and CCS areas shared by universities in provinces adjacent to the province of the CCS. Each of these is discussed in greater detail below:

1. The data were aggregated into the following distance intervals which were established to approximate convenient travel times, as follows:

    i) 0 to 24 miles from the estimated city centre, which represented travel largely within the city and was estimated to require up to approximately one hour travel time. Obviously the estimated travel times were only estimates of the average time. One would expect there to be considerable variance in the travel times depending on the specific conditions encountered.

    ii) 25 to 74 miles from the university centre which was estimated to require between one hour and two hours, or one-quarter of a day of travel time. Consequently, in most instances this interval would imply travel from nearby communities or home areas.

    iii) 75 to 149 miles from the university centre was estimated to represent between one-quarter of a working day and one-half of a day if one were travelling by car.

    iv) 150 to 349 miles from the university centre was estimated to represent a major travel commitment by car of one-half to a full working day.

    v) 350 miles and over from the university centre was used to represent long distance travel, usually from outside of the province.

    It was assumed by the researcher that many people in western Canada tend to fit daily travel, and indeed, most activities for whatever reasons, into convenient time periods based on one-quarter day

units. For example, a shopping trip requiring one-half a day's travel each way would rarely occur unless several days were committed to the trip. Under certain conditions, students and employers may routinely commute distances involving up to one-quarter day travel time each way; however, daily commuting requiring more than one-quarter of a day or two hours each way, would quickly become prohibitive. Once travel time approaches one day for a one-way trip, it was assumed that travel time by itself would become less important while other factors such as the actual economic cost and the comfort of the travel would become more important. For example, from a travel time perspective, it was assumed that the difference between one hour and one-half a working day (or approximately 130 straight line miles) was far more critical to a decision as to whether or not to make a trip, than the travel time difference between a 350 mile trip and a 500 mile trip.

In addition, the straight line distance between the British Columbia mainland and Vancouver Island was considered to be a misrepresentation of the actual travel in the area. Because the straight line distance between Victoria and Vancouver, two heavily populated centres with universities, was calculated to be only 60 miles, an adjustment was made to all water crossings in the area of an additional 80 miles. Thus, distance calculations involving individuals migrating across the water between the mainland and the island, would more adequately portray the time commitment required for the crossing.

In the analysis, the participation rates for each distance interval were calculated for the part- and full-time students in each university. An inter-university comparison of the various participation rates with distance, and intra-university comparison of the participation rates of full- and part-time students was carried out.

2. An analysis was conducted for each university of the home areas or CCS areas with no prospective students enrolled at the university. Labelled as no-response CCS areas, they were mapped to illustrate their geographical location relative to the university. The subsequent analysis involving inter-university comparison, took into account three criteria for university success:
   - i) The numbers of no-response CCS areas per university;
   - ii) The "value" of each no-response CCS area as indicated by the number of prospective students involved; and,
   - iii) A weighted value of each no-response CCS area based on the participation rate a particular university had established for each distance interval. The weighting procedure was as follows:

     Weighted number of prospective students in distance interval D = N x P/100

     where: N . . . . is the number of prospective students in no-response CCS areas in distance interval D;

     P . . . . is the participation rate at distance interval D for responsive CCS areas and taken from tables 10 and 11.

3. An analysis was conducted of the home areas or CCS areas shared by two or more universities within a province (Appendix B). In

addition, an analysis was conducted of the destination of students migrating out of the province of their origin (Appendix C). The analysis included a mapping of the shared CCS areas for:

i) Universities within each province; and,

ii) Universities in provinces adjacent to the province of the CCS area.

Each CCS area was examined to identify which university had the highest participation rate and thus dominated it.

Thirdly, the participation rates for each university were established for 50 mile intervals radiating away from the university. The actual participation rates in 50 mile intervals were then compared to the participation rates predicted by the gravity model by using the formula: Participation = (a constant) + 1/Distance. The comparison of actual and predicted participation rates was accomplished by simply plotting the real and predicted participation rates using the same intercept and visually comparing the two to assess areas of over-prediction and areas of under-prediction.

Fourthly, the home area measures of: distance; average family income five years earlier; percentage of prospective students employed; percentage of prospective students under the age of twenty-five; average family size; and the percentage of the individuals over fifteen who had attended university; were placed in a multiple regression equation and analyzed in a stepwise fashion. Various formats of the regression equation containing the six variables were tried and the equation accounting for the most variation was selected.

To accomplish the latter, the following procedure was implemented:

1. Pearson correlational analyses were performed between three forms of each independent variable with the same three forms of each dependent variable--the three forms were: the untransformed variable, $\log_{10}$ of the variable, and square root of the variable (Appendix D).

2. Correlations resulting from the above analyses were then examined for each form of the dependent variable and the strongest six correlations (one for each independent variable) selected for each of the three forms of the dependent variable;

3. Scattergrams representing the correlations selected were examined to ensure that the linear assumptions were met;

4. Each of the three regression equations thus developed for each form of the dependent variable, was processed as a stepwise regression.

5. The regression equation which accounted for the greatest total variation in the dependent variable was selected as the optimum equation for further consideration;

6. Standardized residuals were plotted (Appendix E) and examined for each of the optimum regression equations to ensure that assumptions related to linearity upon which the regression analyses were based, were not violated.

Subsequent evaluation of the selected regression equations yielded the relative contribution of each variable to the variation in the full-time and part-time participation rates. The analyses were carried out for the pooled university data as well as for data relating to each university catchment area.

# SUMMARY

The study involved new registrants in the faculties of Arts, Science, Arts and Science, and Education at nine of the eleven public universities in western Canada. The time frame for the study was from May 1, 1976 to May 1, 1977 and included all undergraduates born in Canada who registered for the first time within that period.

Data relating to student origins and student status were obtained directly from the nine universities while data related to the home area variables were drawn from magnetic census summary tapes. The smallest unit of analysis was the census consolidated subdivision (CCS) area or home area. The CCS areas were digitized on a map to permit thematic mapping of the data and computer calculations of home area to university distances.

For the University of Lethbridge and the University of Manitoba where the student address data used could have been up-dated by students as they changed their addresses, an address revision error was calculated. Since the error was small for both institutions, no attempt was made to adjust the findings to compensate for the error.

Treatment of the data included the development and examination of four types of maps:

1. Contour maps which displayed the participation rates within each university catchment area for part- and full-time students;

2. Maps which illustrated the CCS areas shared by universities within the same province and thus identified as areas of competition between those universities;

3. Maps which illustrated the CCS areas from which students migrated to universities in adjacent provinces; and,

4. Maps which displayed the provincial no-response CCS areas for each university.

Treatment of the data also involved an investigation of participation rates within distance intervals radiating away from each university to permit: a) a comparison of the nine universities with respect to the participation rates over distance, and, b) an investigation of the appropriateness of the gravity model for predicting participation at various distance intervals. The first part was accomplished by placing participation data into five unequal distance intervals based on convenient travel times while the second part involved seven fifty-mile distance intervals for the participation data.

Finally, treatment of the six independent home area variables to assess their relative capability to predict participation rates for a university, was carried out through the use of stepwise regression procedures. However, before the various regression equations could be constructed, logarithmic and square root transformations were carried out on all variables to determine which transformations resulted in the highest Pearson correlation while still meeting the prerequisite assumptions of linearity.

# CHAPTER 4

## FINDINGS: PARTICIPATION AND GEOGRAPHIC ORIENTATION

The findings are presented in this and the following chapter. This chapter is confined to a review of the findings related to student participation as earlier defined and the students' geographical orientation prior to enrollment. Findings related to the relative success with which six CCS or home area characteristics predict the full-time and part-time participation of new students from the area for each university will be presented in Chapter 5.

The findings exhibited in this chapter fall into four areas:

1. The part- and full-time catchment areas for each university;

2. The relative participation rates of the nine universities as they declined with distance from the university centres and the appropriateness of the gravity model for predicting the decline in participation over distance;

3. The no-response within-province CCS areas for each university; and,

4. Interuniversity competition through an analysis of the shared CCS areas dominated by universities within the provinces as well as an analysis of the universities in adjacent provinces to which students migrated to attend university.

In addition, the findings for each of the four areas will be presented for each university by location from west to east in the following order: the University of Victoria, the University of British Columbia, the University of Lethbridge, the University of Calgary, the University of Alberta, the University of Saskatchewan, the University of Regina, Brandon University, and the University of Manitoba.

## UNIVERSITY CATCHMENT AREAS

Figures 4 to 21 inclusive are contour maps representing the full-time and part-time catchment areas for each of the nine universities studied. The maps display:

1. the geographic distribution of the CCS areas with each CCS or home area designated by a + sign;
2. the distribution of the participation rates over the university catchment areas; and,
3. the geographic areas identified as having a high participation rate.

The areas designated as high participation areas can be located on the contour maps as the shaded areas and represent approximately the upper quartile of the participation rate distribution for the university being described. Because of the limitation of contour mapping with sparsely scattered points, some of the outlying points of the catchment areas were not illustrated on the maps. However, for each map where such points are missing, their absence has been noted and a brief description of them provided.

## The University of Victoria

Figure 4 and Figure 5 represent the catchment areas for full- and part-time new enrollees respectively, for the University of Victoria between May 1, 1976 and May 1, 1977.

During the period under study, the Universtiy of Victoria students originated from CCS areas widely distributed over the province with little obvious difference between the full-time and part-time CCS origins, except for the low participation rate for full-time students from Alberta. The full-time participation rate was, on the average, twice that of the part-time participation rate. In addition, the CCS areas exhibiting a high participation rate for full-time students, were generally located on Vancouver Island and the coast north of Vancouver along with three high participation areas close to the Alberta-British Columbia border. The part-time participation was largely confined to Vancouver Island with one exception located close to the provincial border. One point of origin was excluded from the full-time map, which represented a CCS area with a high participation level of 0.396 percent and which was located in northern British Columbia. For the map describing part-time participation for the University of Victoria, three points were excluded, all three from northern British Columbia, one of which had a high participation rate of 0.398 percent while the others had participation rates of 0.035 and 0.017 percent.

Descriptive statistics for the University of Victoria participation rates are provided in Table 1.

Table 1

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF VICTORIA

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.257 | 0.102 |
| Median | 0.159 | 0.056 |
| Fourth Quartile | 0.344 to 1.496 | 0.137 to 0.555 |
| Range | 0.008 to 1.496 | 0.002 to 0.555 |
| No. Points | 65 | 35 |
| Points Excluded (From the Maps) | 1 | 3 |

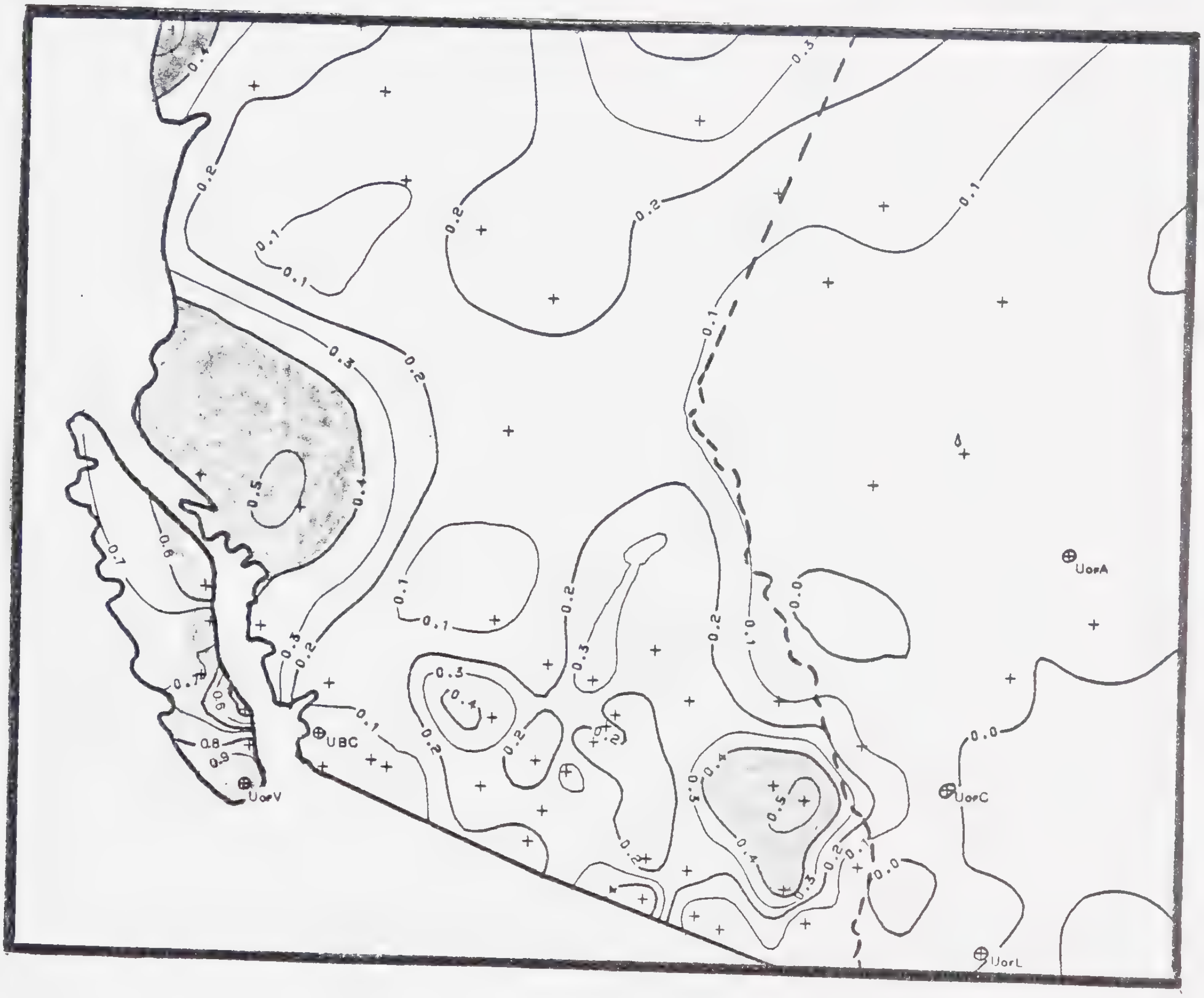

Figure 4 University of Victoria Full-Time Participation Rates
Scale: 1 inch = 225 miles

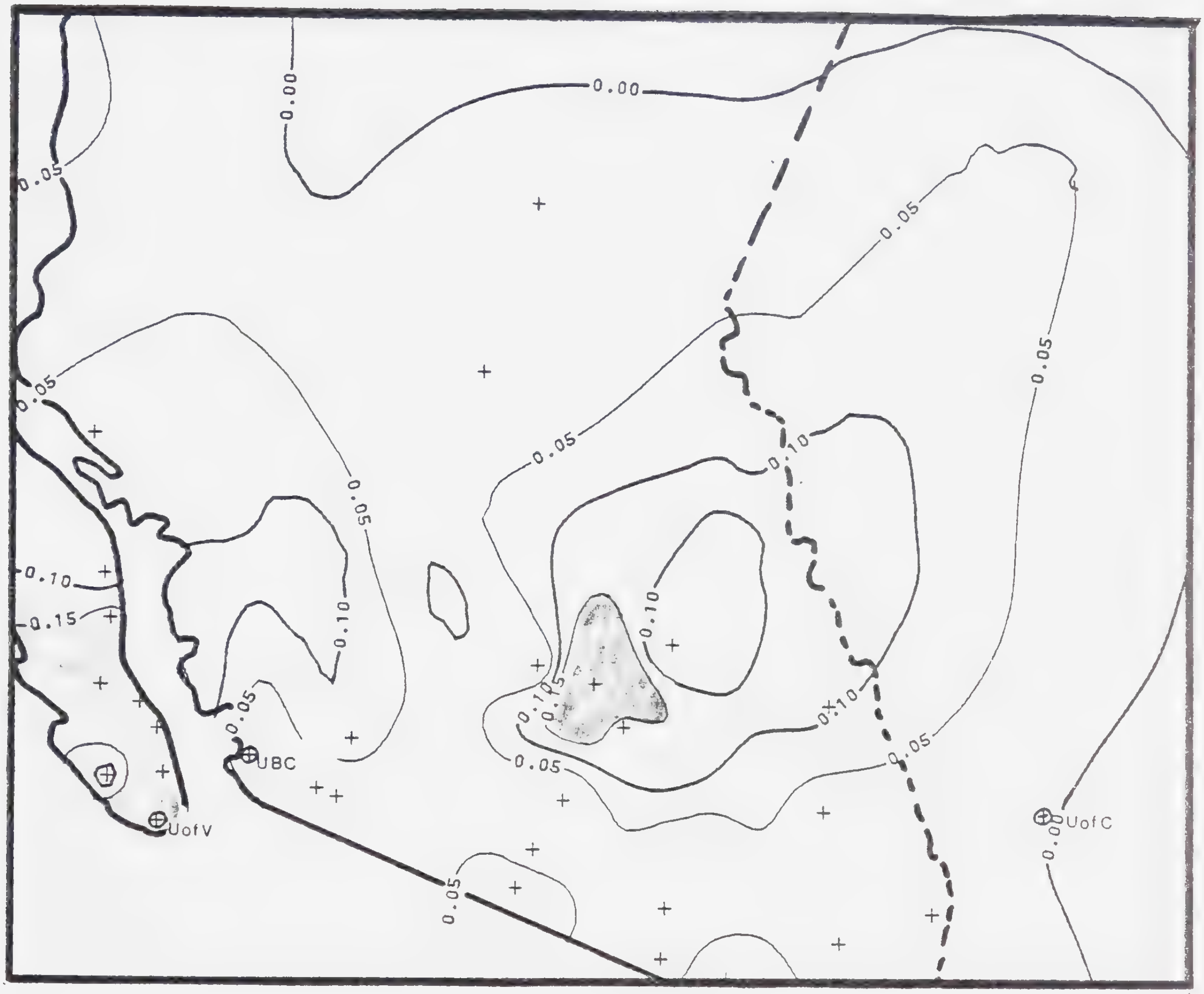

Figure 5 University of Victoria Part-Time Participation Rates
Scale: 1 inch = 100 miles

### The University of British Columbia

The geographic distribution of responsive CCS areas (Figures 6 and 7) was fairly even throughout the province for both part- and full-time new registrants, with some overlap of both into Alberta. However, Table 2 indicates that the participation rates for full-time enrollments were on the average more than twice those of the part-time enrollments. There were primarily four locations of high participation for full-time enrollments: Vancouver, as the university centre; Victoria; two areas approximately 150 to 200 miles north of Vancouver; and three CCS areas in the southern part of British Columbia near the Alberta border. For part-time participation, the high participation areas were mainly confined to Vancouver and along the British Columbia-U.S.A. border.

Points missing from the full-time participation map included Edmonton and one CCS area in northern British Columbia, both of which had less than 0.2 percent participation rates. For the part-time map, points excluded were a single high participation area along the northern British Columbia coast and a CCS area in Alberta with a participation rate of 0.047 percent.

### The University of Lethbridge

The geographic distribution of responsive CCS areas for the University of Lethbridge (Figures 8 and 9) was much more extensive for the full-time enrollment than it was for the part-time enrollment. The full-time enrollment originated from CCS areas located throughout Alberta, including CCS areas north of Edmonton and in the south-eastern corner of British Columbia, whereas the part-time origins were confined to southern Alberta immediately surrounding the university centre and southwestern Saskatchewan. The high participation areas were, for the

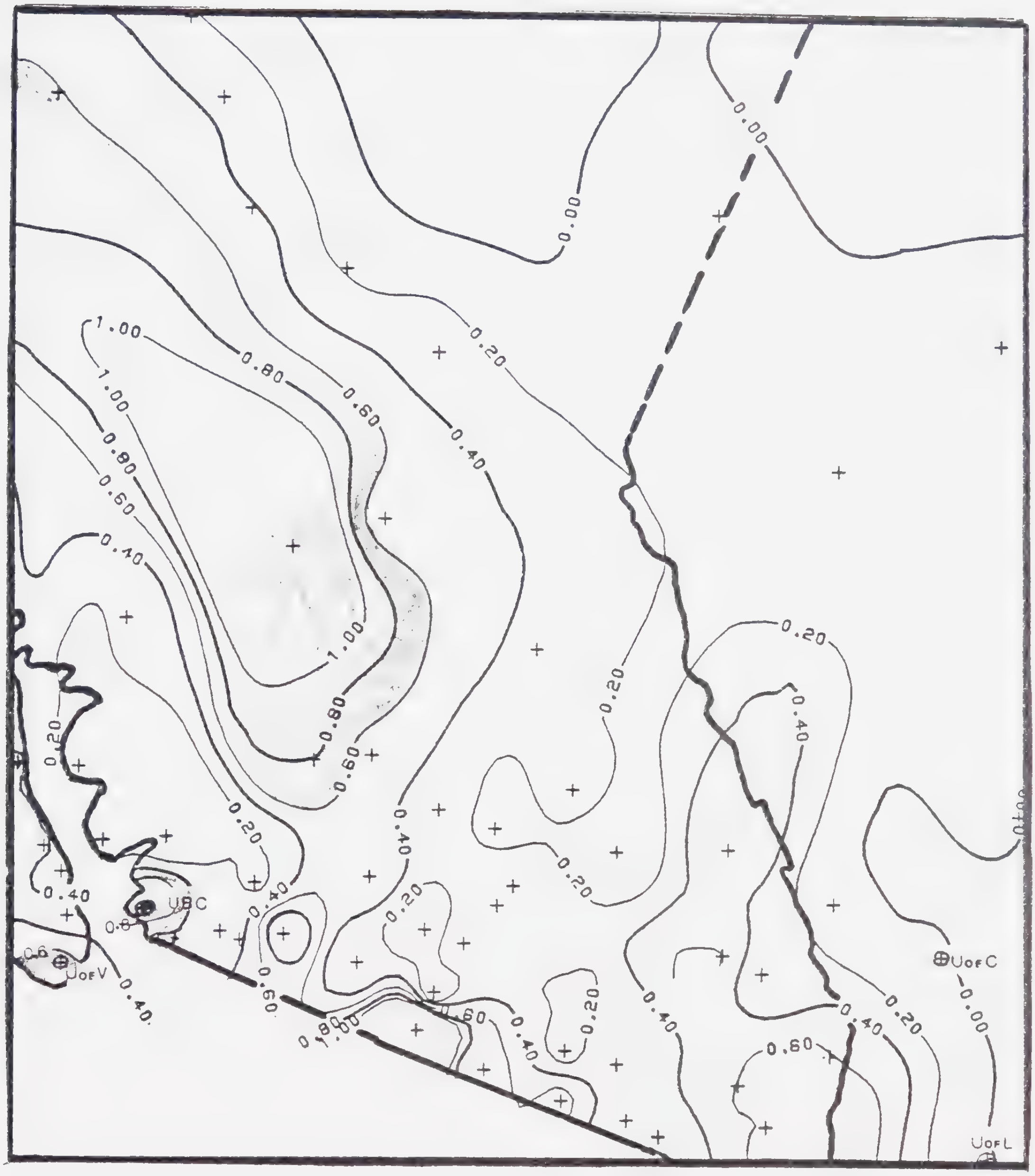

Figure 6 University of British Columbia Full-Time Participation Rates

Scale: 1 inch = 100 miles

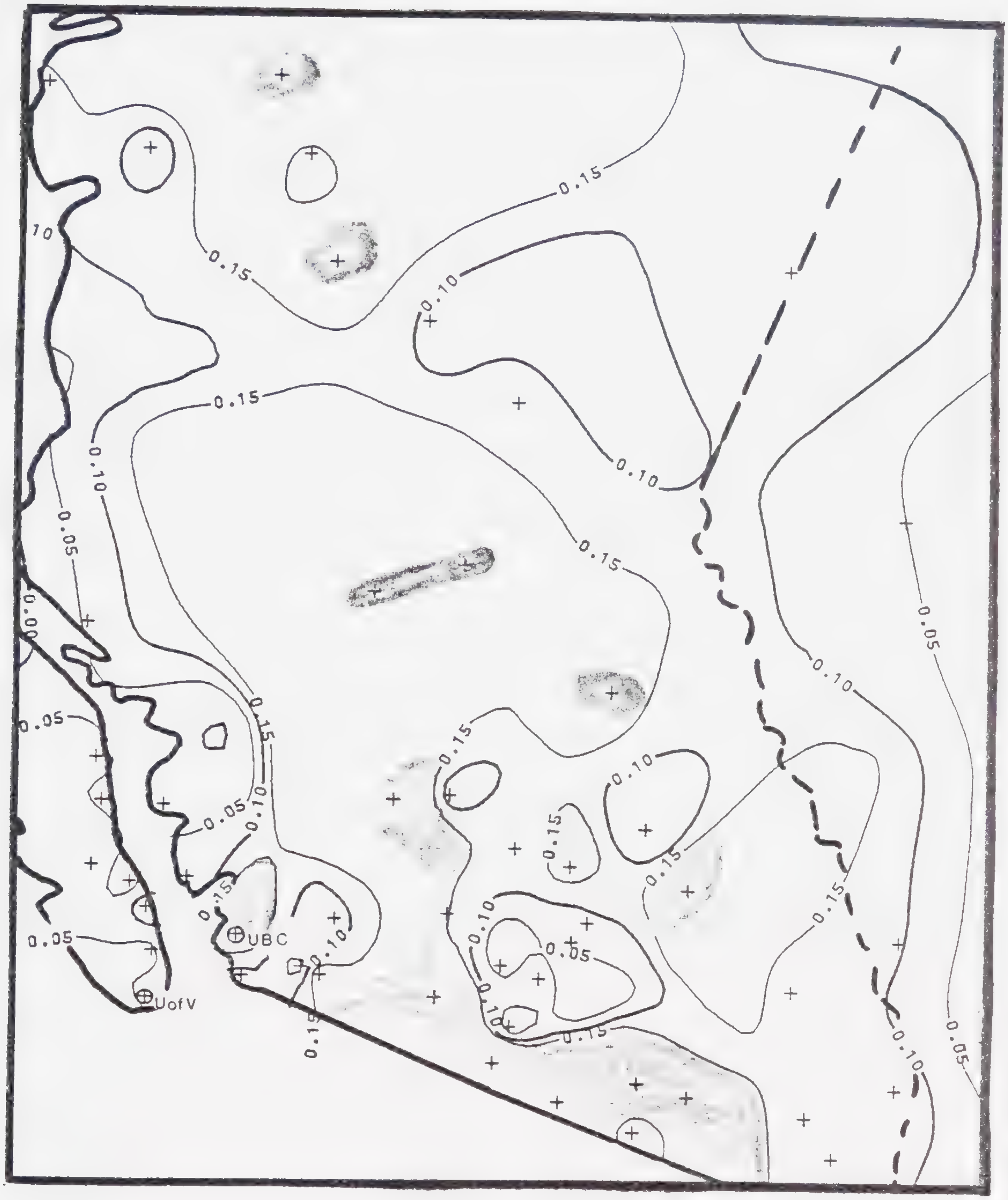

Figure 7 University of British Columbia Part-Time Participation Rates
Scale: 1 inch = 100 miles

Table 2

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF BRITISH COLUMBIA

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.357 | 0.154 |
| Median | 0.282 | 0.093 |
| Fourth Quartile | 0.493 to 2.217 | 0.174 to 1.087 |
| Range | 0.009 to 2.217 | 0.001 to 1.087 |
| No. Points | 61 | 57 |
| Points Excluded (From the Maps) | 2 | 2 |

Table 3

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF LETHBRIDGE

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.287 | 0.193 |
| Median | 0.070 | 0.122 |
| Fourth Quartile | 0.440 to 1.418 | 0.329 to 1.052 |
| Range | 0.001 to 1.418 | 0.001 to 1.052 |
| No. Points | 35 | 25 |
| Points Excluded (From the Maps) | 5 | 1 |

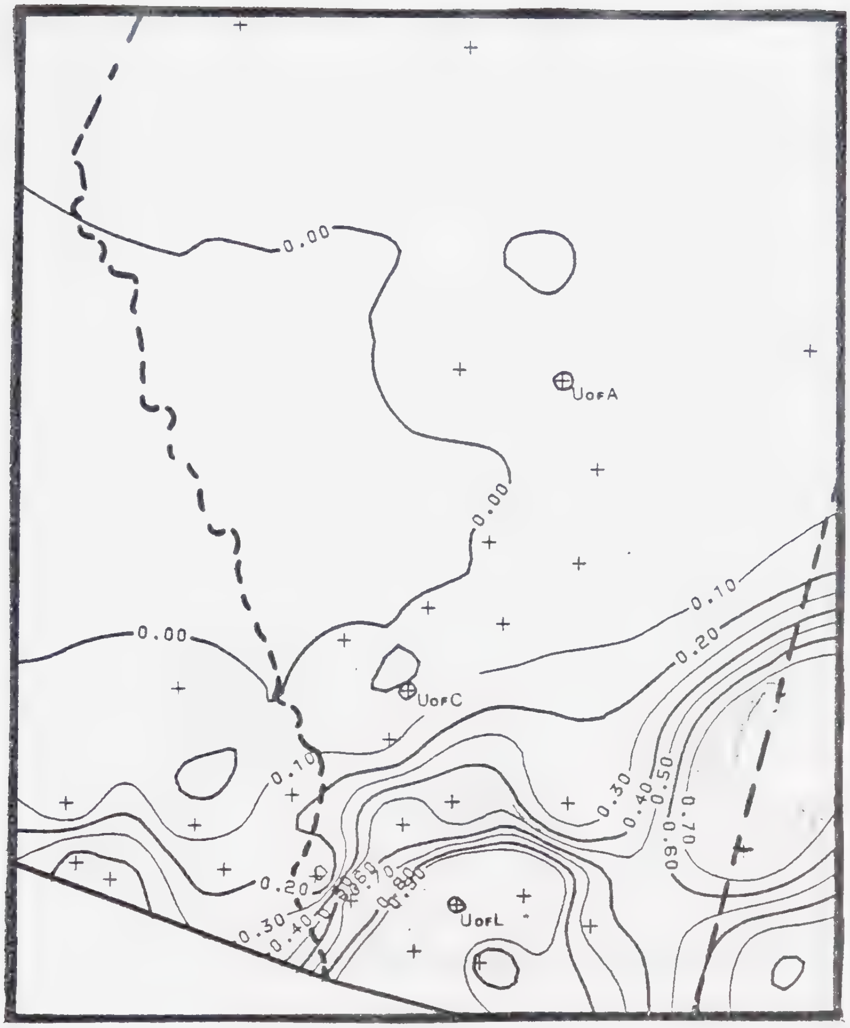

Figure 8 University of Lethbridge Full-Time Participation Rates
Scale: 1 inch = 126 miles

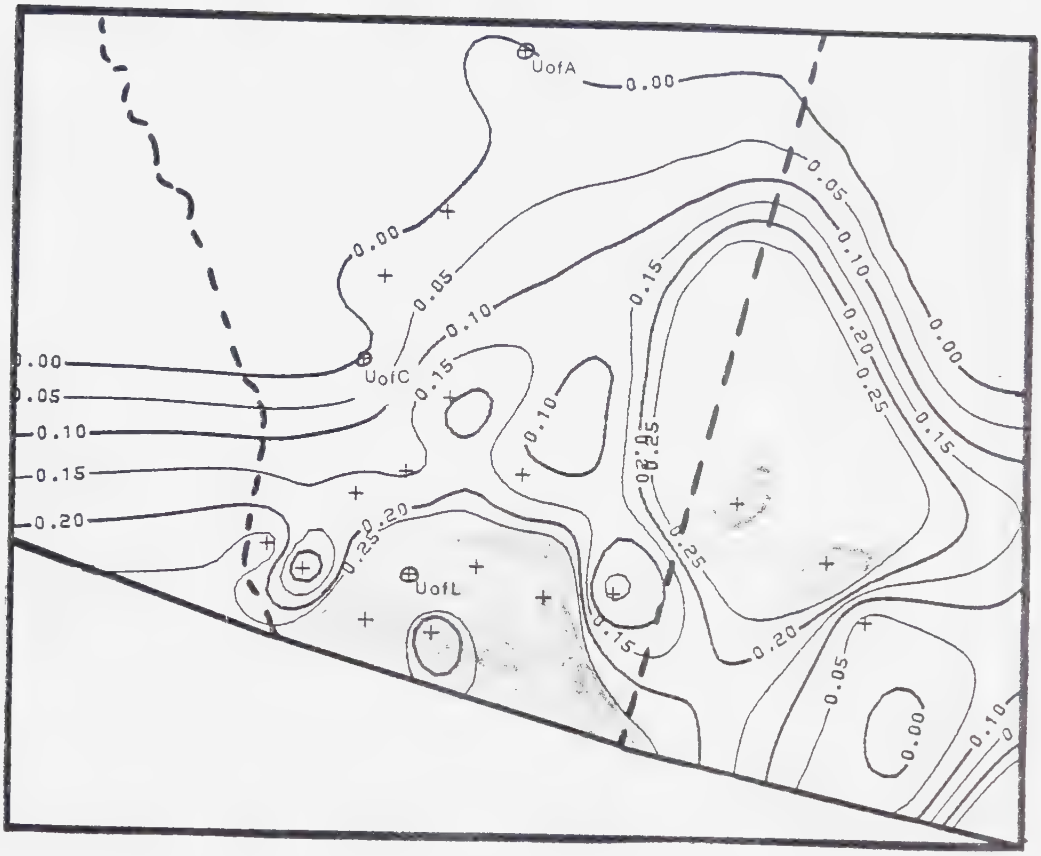

Figure 9 University of Lethbridge Part-Time Participation Rates
Scale: 1 inch = 100 miles

most part, located in the areas immediately surrounding the city of Lethbridge for both full- and part-time enrollments. Table 3 illustrates that the participation rates for full-time students were, on the average, approximately 40 percent higher than the part-time participation rates.

Five points of origin were exluded from the full-time participation map in Figure 8. They include four CCS areas along the west coast, two with participation of 0.038 percent and the other two with less than 0.002 percent participation. The fifth point was located in Saskatchewan with a rate of 0.185 percent. The only CCS area excluded from the part-time map in Figure 9, was located in Saskatchewan with participation of 0.004 percent.

## The University of Calgary

The distribution of the origins of new enrollees for the University of Calgary (Figures 10 and 11) was relatively limited for part-time students with two CCS areas located in Saskatchewan and the remainder close to the university centre. For full-time students, the University of Calgary received new enrollees from an array of CCS areas distributed geographically over Alberta and portions of the adjacent provinces. In addition, high participation areas for the part-time students were more or less confined to the Calgary area and somewhat south of Calgary, whereas the high participation areas for full-time students extended east and west across Alberta from the university centre and well into Saskatchewan, beyond the University of Saskatchewan. However, on the eastern side of the university centre, high participation areas stopped short of the British Columbia-Alberta border, even though there were responsive CCS areas located in British Columbia nearly one hundred to one hundred and fifty miles away from the university centre.

Table 4

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF CALGARY

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.206 | 0.107 |
| Median | 0.112 | 0.073 |
| Fourth Quartile | 0.305 to 1.152 | 0.002 to 0.513 |
| Range | 0.305 to 1.152 | 0.136 to 0.513 |
| No. Points | 74 | 15 |
| Points Excluded (From the Maps) | 6 | 1 |

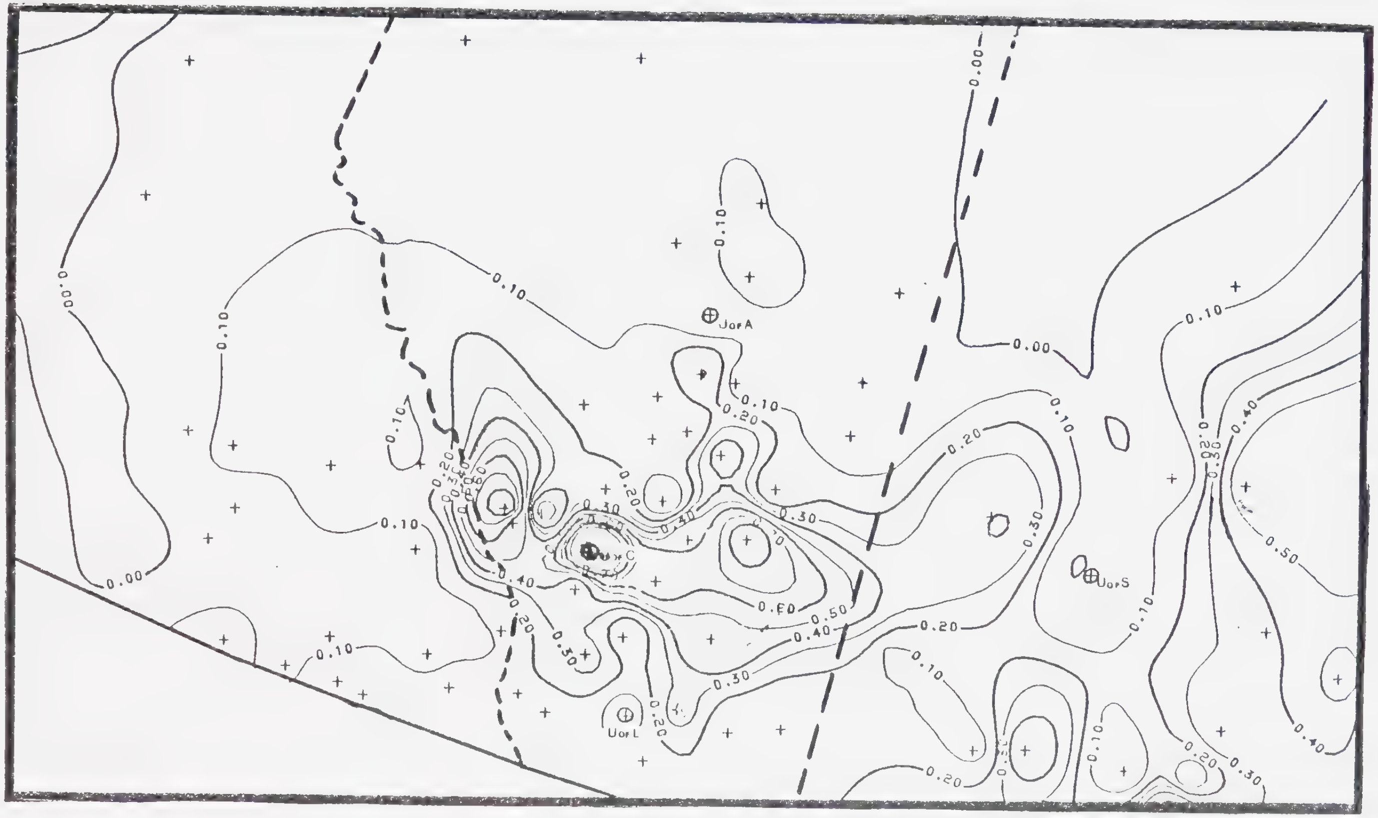

Figure 10 University of Calgary Full-Time Participation Rates
Scale: 1 inch = 130 miles

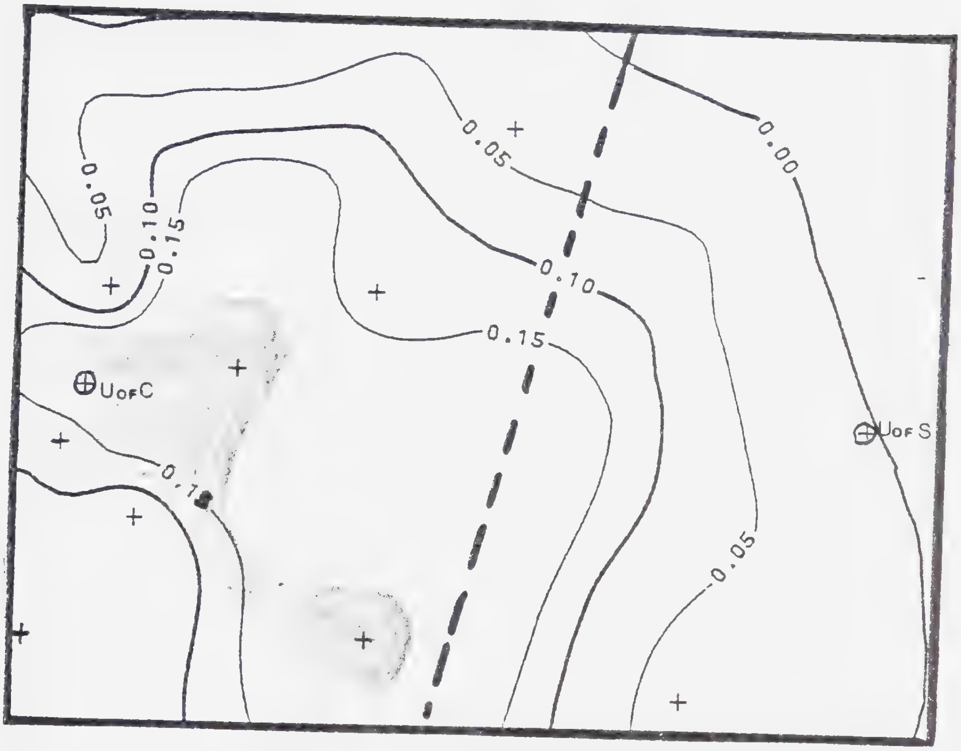

Figure 11 University of Calgary Part-Time Participation Rates
Scale: 1 inch = 95 miles

Table 4 demonstrates that participation rates for the University of Calgary full-time students were approximately twice those of part-time students. Six points were excluded from the map in Figure 10 for full-time students, all six of which were located along the west coast and had participation rates of less than 0.01 percent. The single point excluded from the part-time map was also located on the west coast with a participation rate of 0.002 percent.

The University of Alberta

The full- and part-time high participation areas displayed in Figures 12 and 13, were approximately the same--close to the university centre and northwest of Edmonton with the addition to the part-time profile of several CCS areas in Saskatchewan near the Alberta-Saskatchewan border. However, Table 5 illustrates that differences between part- and full-time origins included a participation rate for full-time students which was approximately twice that of the part-time students. In addition, the full-time enrollment extended much more extensively into both Saskatchewan and British Columbia than the part-time areas. Both the University of Calgary and the University of Lethbridge were in low participation areas of less than 0.05 percent for part-time participation. Nine CCS areas were excluded from the full-time participation map: six points from along the west coast and Vancouver Island, all of which had less than 0.03 percent participation rates; two from northern Alberta with participation rates of 0.135 and 0.126; and one in northern British Columbia with a participation rate of 0.251. The three participation rates excluded from the part-time participation map were all from northern Alberta--one of which was a high participation

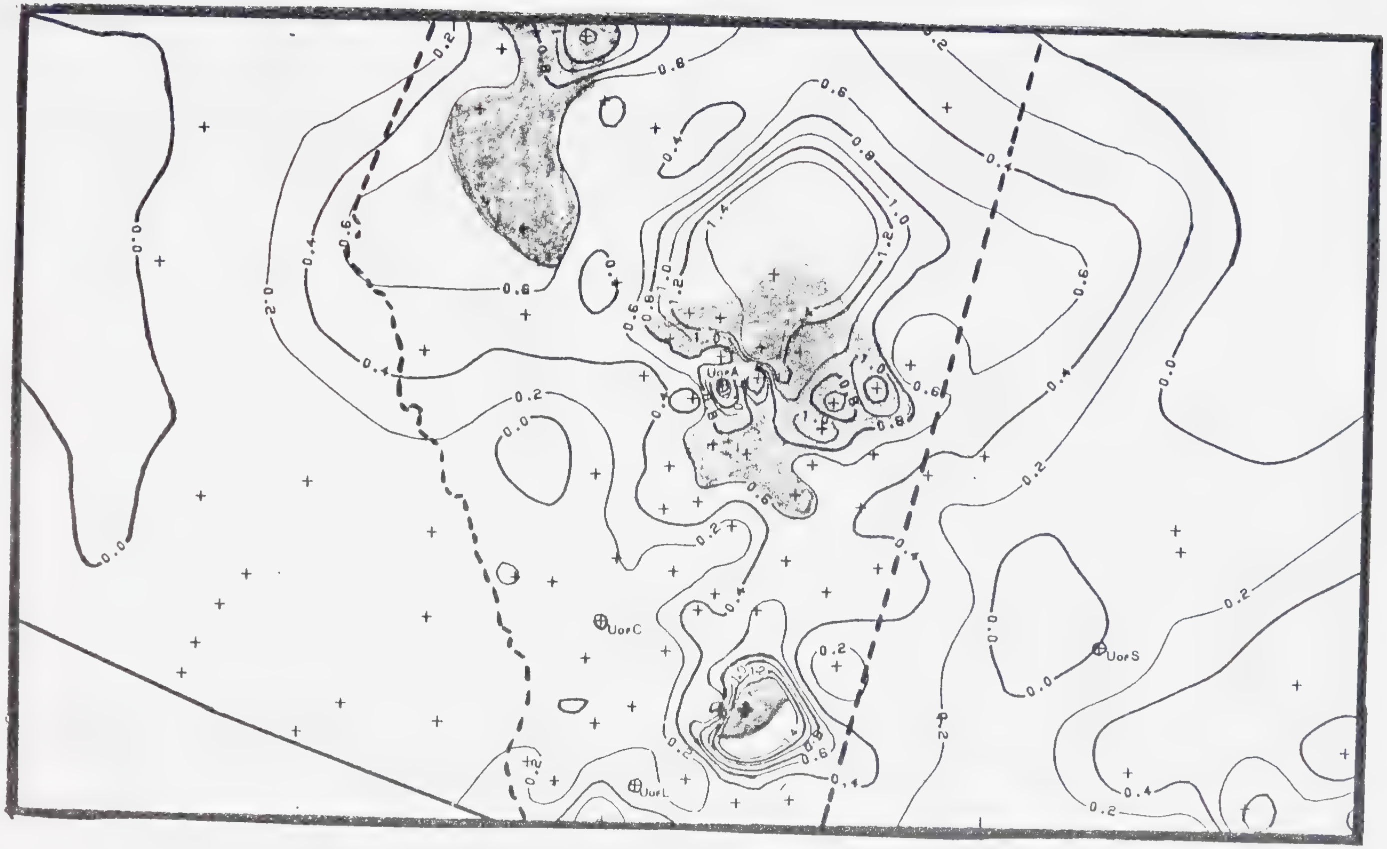

Figure 12 University of Alberta Full-Time Participation Rates
Scale: 1 inch = 105 miles

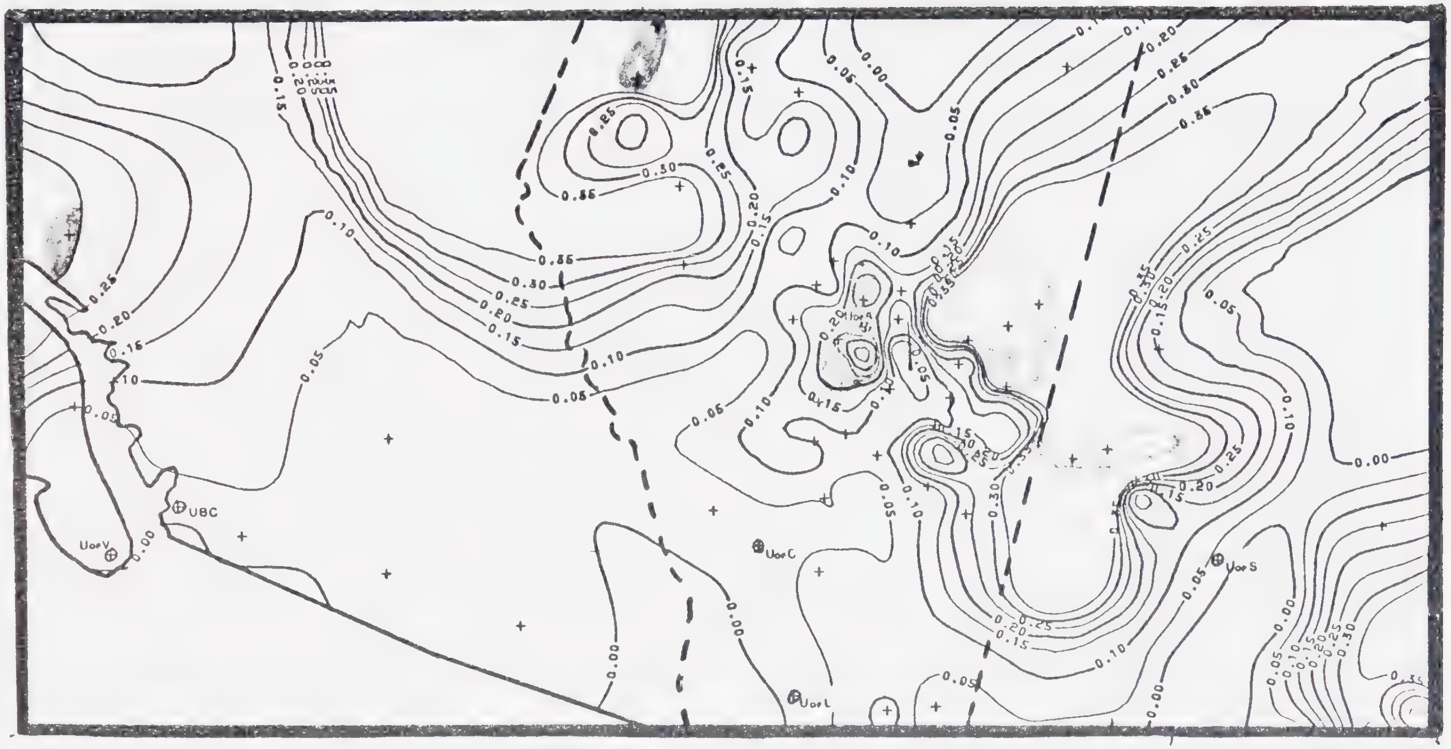

Figure 13 University of Alberta Part-Time Participation Rates
Scale: 1 inch = 140 miles

Table 5

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF ALBERTA

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.452 | 0.229 |
| Median | 0.323 | 0.112 |
| Fourth Quartile | 0.574 to 3.03 | 0.214 to 3.03 |
| Range | 0.005 to 3.03 | 0.001 to 3.03 |
| No. Points | 104 | 63 |
| Points Excluded (From the Maps) | 9 | 1 |

area with a rate of 0.635 percent while the other two areas had participation rates of less than 0.157 percent.

## The University of Saskatchewan

The provinces of Saskatchewan and Manitoba had CCS areas which were considerably smaller in size than those in Alberta and British Columbia. Consequently, there were potentially many more points to be located on maps of the responsive CCS areas for Saskatchewan and Manitoba.

The full-time catchment area for the University of Saskatchewan, illustrated in Figure 14, tended to extend more into the adjacent provinces than the part-time catchment area illustrated in Figure 15. In addition, Table 6 demonstrates that the full-time participation rates for the University of Saskatchewan were approximately forty percent higher than the part-time participation rates.

Two features illustrated in Figure 15 are: (a) that the quartile with the greatest part-time participation rate indicated by shading, did not include the university centre, and (b) that Regina is shown to have had the same low level of participation as out-of-province university centres such as Winnipeg and Brandon with less than 0.5 percent participation.

Two Manitoba points excluded from the full-time participation map, had participation rates of less than 0.05 percent while three other points excluded from the same map but located in northern Alberta, had participation rates of 0.198, 0.35, and 2.2 percent.

## The University of Regina

Figures 16 and 17 provide contour maps of the University of Regina catchment areas and demonstrate that the University of Regina draws few students from outside of Saskatchewan. During the period under study,

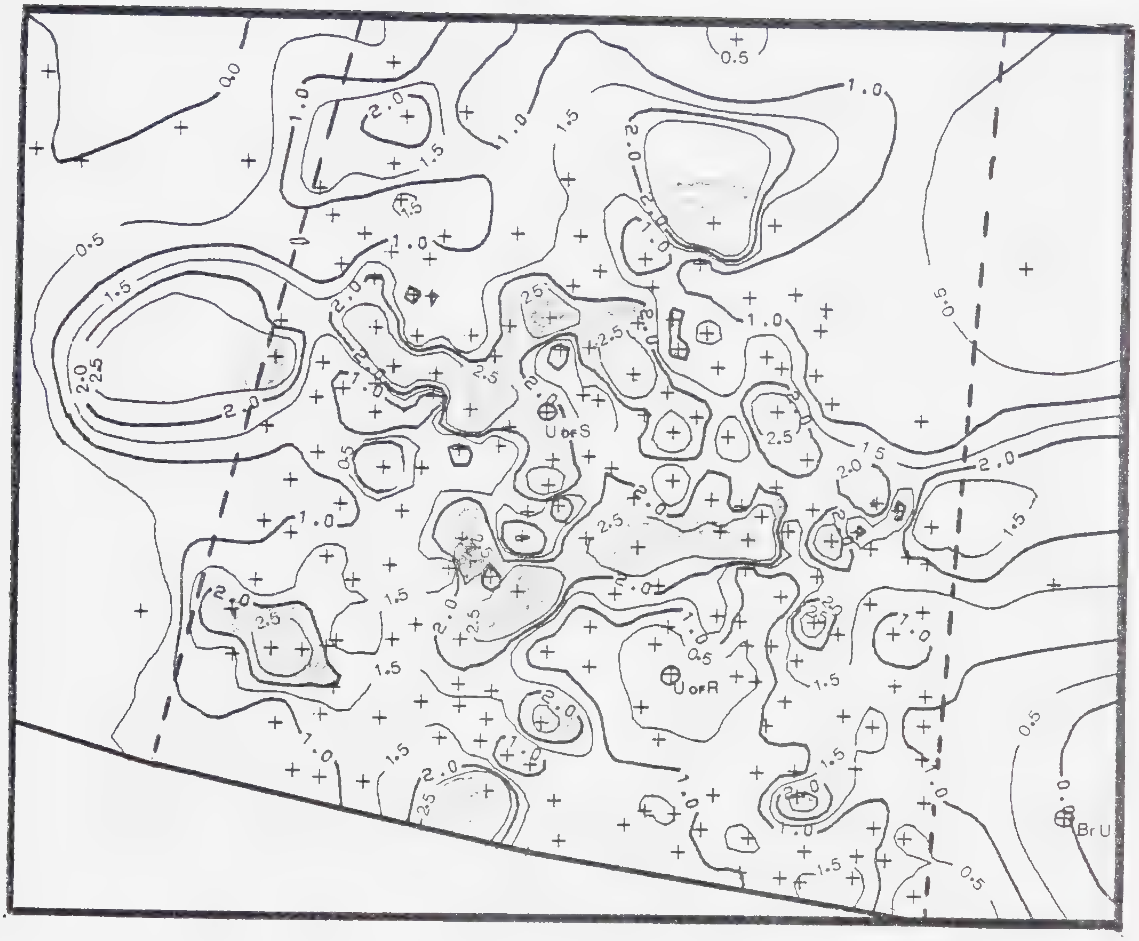

Figure 14 University of Saskatchewan Full-Time Participation Rates
Scale: 1 inch = 105 miles

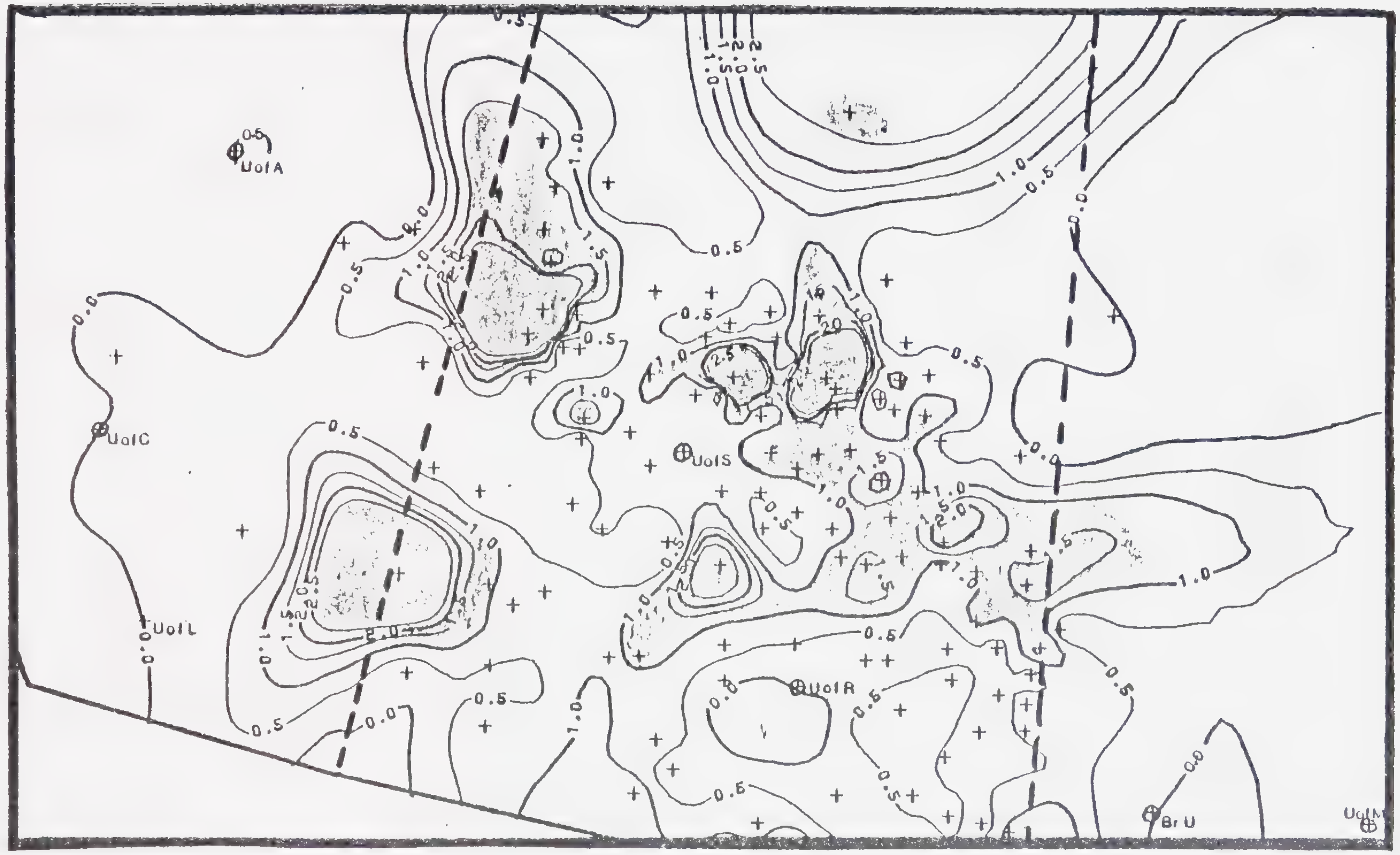

Figure 15 University of Saskatchewan Part-Time Participation Rates
Scale: 1 inch = 105 miles

Table 6

## DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF SASKATCHEWAN

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 1.487 | 1.048 |
| Median | 1.20 | 0.678 |
| Fourth Quartile | 1.923 to 6.667 | 1.111 to 12.632 |
| Range | 0.003 to 6.667 | 0.002 to 12.632 |
| No. Points | 219 | 121 |
| Points Excluded (From the Maps) | 5 | 0 |

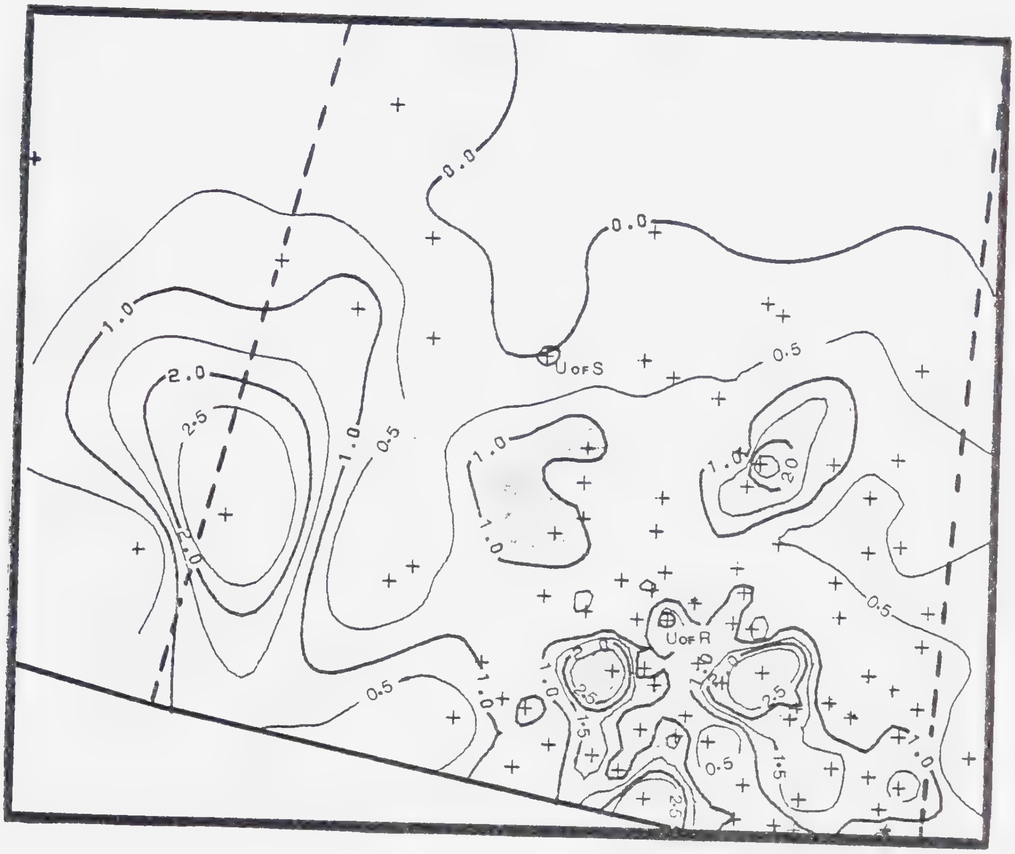

Figure 16 University of Regina Full-Time Participation Rates
Scale: 1 inch = 64 miles

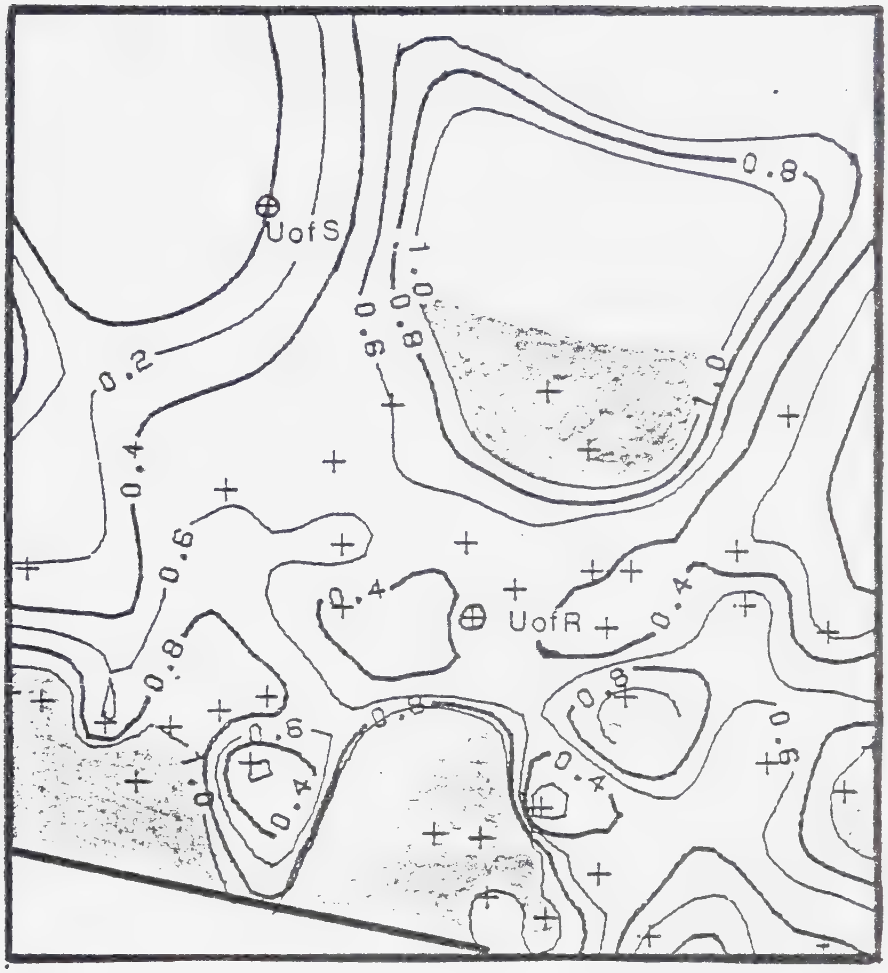

Figure 17 University of Regina Part-Time Participation Rates
Scale: 1 inch = 64 miles

Table 7

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF REGINA

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 1.893 | 0.709 |
| Median | 0.645 | 0.502 |
| Fourth Quartile | 1.111 to 4.211 | 1.031 to 3.077 |
| Range | 0.003 to 6.667 | 0.007 to 3.077 |
| No. Points | 91 | 0 |
| Points Excluded (From the Maps) | 1 | 0 |

the southwestern corner of Saskatchewan close to the U.S.A. border, contained the high participation areas for part-time students enrolled at the University of Regina while the CCS areas in the southeastern corner of Saskatchewan tended to be high level participation areas for the full-time students. In addition, Saskatoon, the University of Saskatchewan centre, had participation levels similar to the university centres located outside of Saskatchewan.

Table 7 illustrates that the magnitude of the full-time participation rate for the University of Regina did not differ much from the part-time participation, with a mean full-time rate of 0.893 percent and a mean part-time rate of 0.709 percent.

The only point missing from the University of Regina map is a point representing the city of Calgary with a full-time participation rate of 0.001 percent.

### Brandon University

Brandon University illustrated by Figures 18 and 19, had a relatively low level of participation throughout, with fifty-one responsive CCS areas for full-time students and thirty-four for part-time students. Three of the full-time areas were in Saskatchewan with all three having a participation rate of less than 0.5 percent. One of the three points has been excluded from the map in Figure 18. For the part-time participation map (Figure 19) three of the CCS areas were also located in Saskatchewan, all three of which had a participation rate of less than 0.5 percent and one of which has been excluded from the map.

In general, the full-time participation rate was about forty percent higher than the part-time participation rate as illustrated in Table 8.

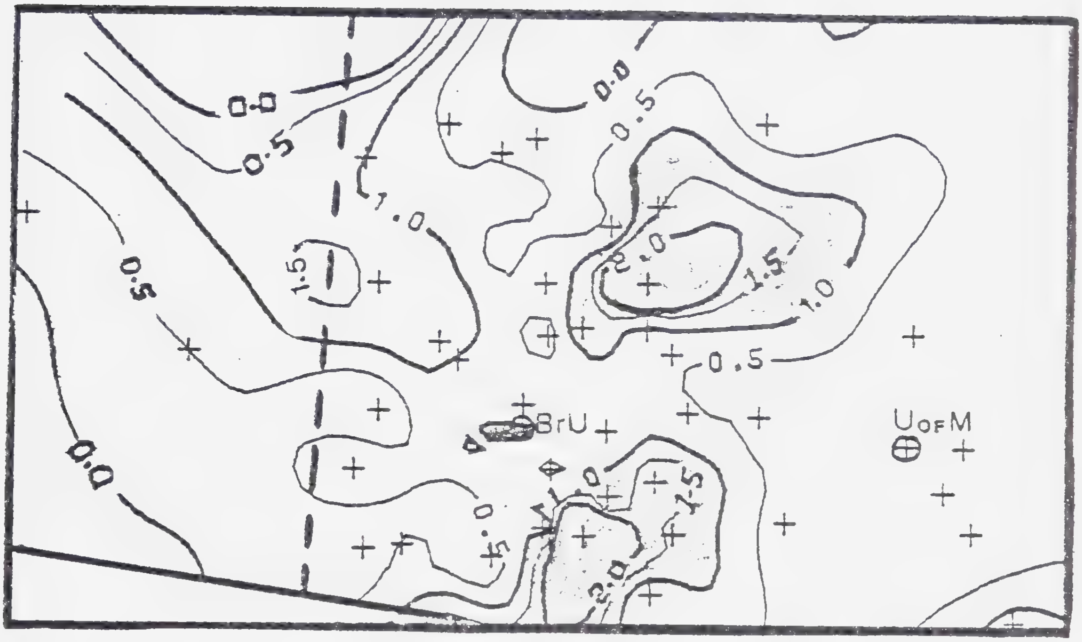

Figure 18 Brandon University Full-Time Participation Rates
Scale: 1 inch = 64 miles

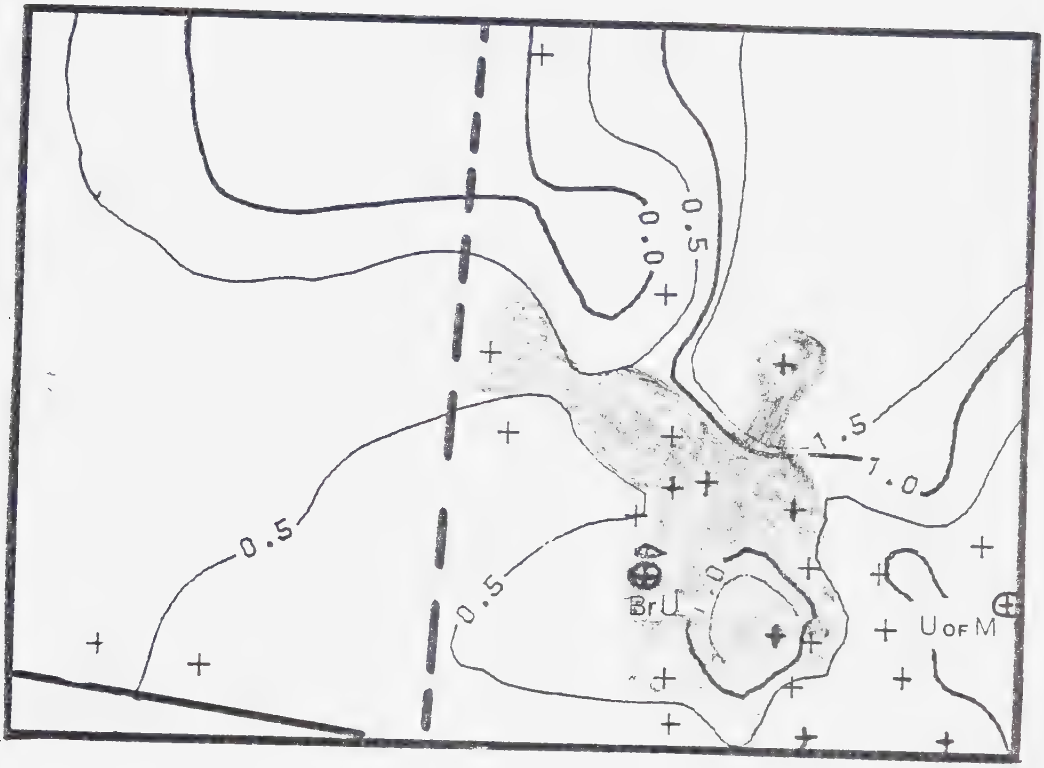

Figure 19 Brandon University Part-Time Participation Rates
Scale: 1 inch = 64 miles

Table 8

## DESCRIPTIVE STATISTICS FOR PARTICIPATION AT BRANDON UNIVERSITY

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.857 | 0.614 |
| Median | 0.588 | 0.351 |
| Fourth Quartile | 1.043 to 5.333 | 0.661 to 5.185 |
| Range | 0.018 to 5.333 | 0.006 to 5.185 |
| No. Points | 51 | 34 |
| Points Excluded (From the Maps) | 1 | 1 |

The Brandon University full-time map (Figure 18) illustrates two distinct areas of high participation beside the city of Brandon itself. The first contained five CCS areas and was located south of Brandon, while the second contained four CCS areas and was located north of Brandon, and about the same distance from Brandon University as from the University of Manitoba in Winnipeg. The high participation areas tended to fall immediately around the city of Brandon and very close to the Brandon University.

## The University of Manitoba

The contour maps displayed in Figure 20 and Figure 21 illustrate the tendency for the full-time student origins to reach more extensively into the province of Saskatchewan than the part-time origins. Both the full- and part-time origins include CCS areas in western Ontario which, because of the few areas involved and the distances involved, were excluded from the map. The full-time points excluded involved participation rates of 0.221, 0.037, and 0.279 while the part-time map excluded three points in Saskatchewan with participation rates of less than 0.2 percent.

Summary statistics for the University of Manitoba participation rates are in Table 9 and illustrate that the full-time participation rate is, on the average, about twenty-one percent higher than the part-time rate.

Except for isolated single points, the full-time high participation areas tended to be directly north of Brandon and sixty-five to one-hundred and eighty miles from the University of Manitoba rather than immediately adjacent to the university centre. For the part-time profile, the high participation CCS areas were located in three distinct

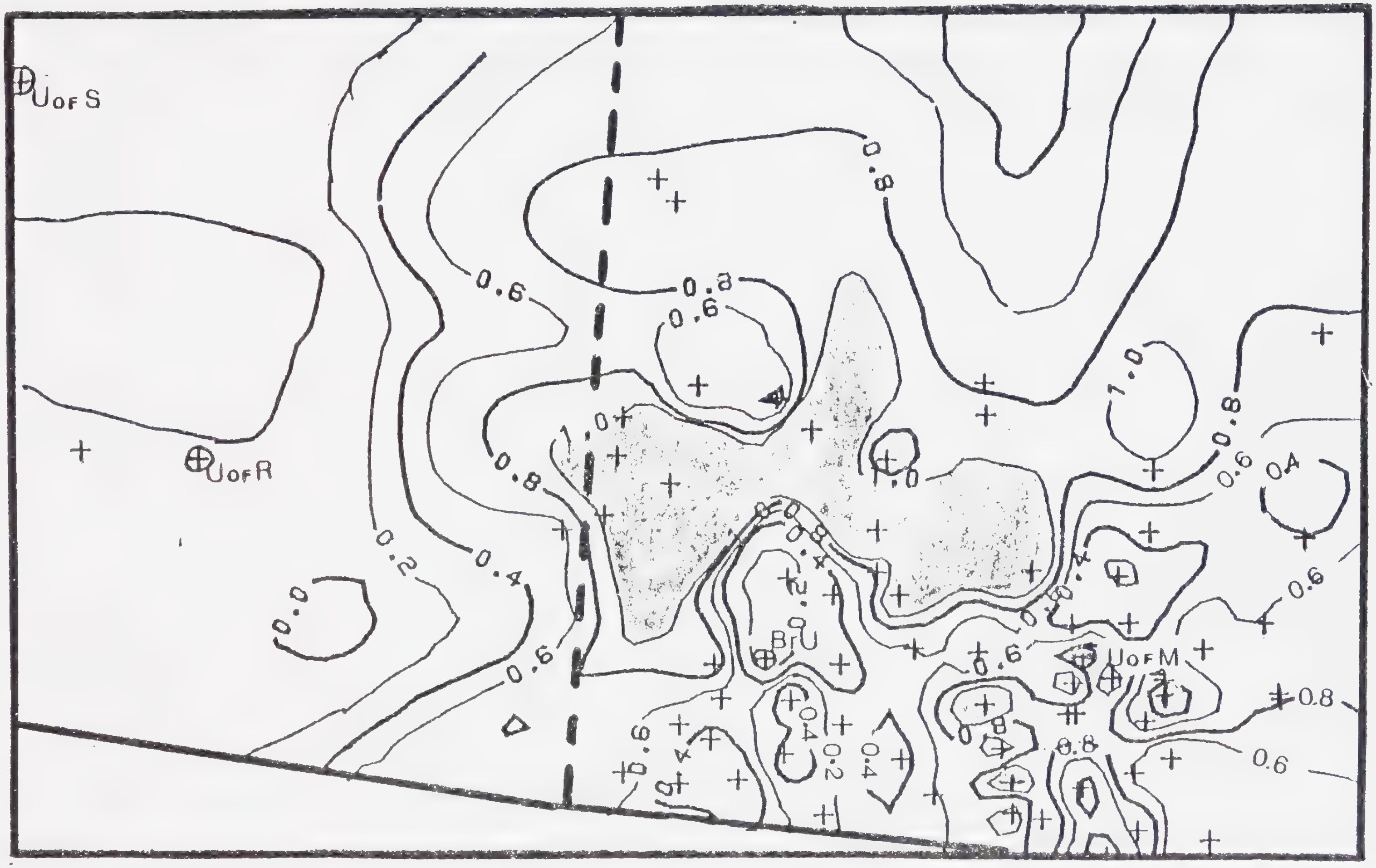

Figure 20 University of Manitoba Full-Time Participation Rates
Scale: 1 inch = 64 miles

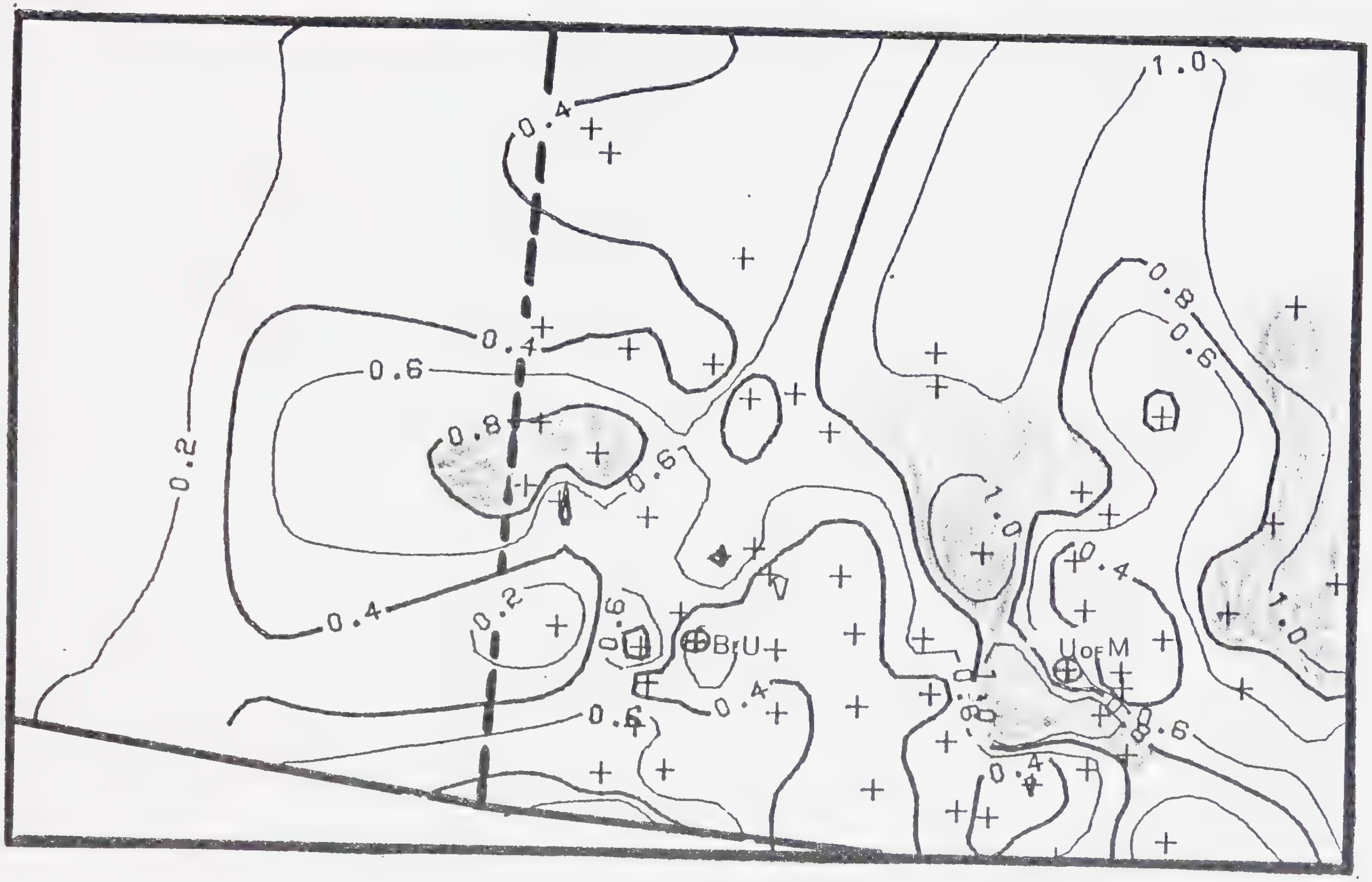

Figure 21 University of Manitoba Part-Time Participation Rates
Scale: 1 inch = 64 miles

Table 9

DESCRIPTIVE STATISTICS FOR PARTICIPATION AT THE UNIVERSITY OF MANITOBA

| | Full-time Participation (%) | Part-time Participation (%) |
|---|---|---|
| Mean | 0.691 | 0.569 |
| Median | 0.606 | 0.469 |
| Fourth Quartile | 3.952 | 3.8 |
| Range | .003 to 3.0 | .004 to 1.739 |
| No. Points | 75 | 68 |
| Points Excluded (From the Maps) | 3 | 6 |

pockets: close to Winnipeg, south and northwest of Winnipeg; close to the Manitoba-Ontario border; and close to the Manitoba-Saskatchewan border.

As for differences in participation rates between full- and part-time distributions, the full-time average participation rates were only slightly higher than the average part-time participation rates.

## Findings

Visual data contained in the contour maps described in this section and accompanied by descriptive statistical data for the various catchment areas, has led to a number of observations. They are as follows:

Observation no. 1. The full-time catchment areas consistently contained more response CCS areas than did the part-time catchment areas.

Observation no. 2. The participation rates for full-time enrollments were consistently higher than the participation rates for part-time enrollments, although the extent of the differential varied markedly between universities.

Observation no. 3. Participation rates varied substantially from university to university for both full- and part-time enrollments with the University of Saskatchewan having the highest mean full-time participation rate of 1.487 percent and mean part-time rate of 1.048 percent while the University of Calgary had the lowest mean full-time participation rate at 0.206 percent and the University of Victoria with the lowest mean part-time participation rate at 0.102 percent.

Observation no. 4. Other university centres within a university's catchment area and within the province appeared to have low participation rates comparable to other university centres within the catchment basin

but outside of the province. Of the universities studied, the only exception to the latter was the University of British Columbia catchment area for full-time participation in which the city of Victoria had a relatively high participation rate in the University of British Columbia enrollment.

Observation no. 5. Participation from CCS areas in adjacent provinces was extremely low relative to participation in CCS areas within the province of the university.

Observation no. 6. Examination of the part-time and full-time catchment areas for the universities in Alberta displayed in Figures 8 and 13 demonstrated that the universities in the province of Alberta tended to differ from the universities in the other three provinces. In Alberta, the province appeared to be divided roughly into three sections with northern Alberta containing the University of Alberta part- and full-time catchment areas, central Alberta containing the University of Calgary part- and full-time catchment areas, and southern Alberta containing the University of Lethbridge part- and full-time catchment areas. Thus the three universities tended to complement one another with respect to the geographic distribution of their respective catchment areas. However, an examination of the differences between full- and part-time catchment areas within each of the three universities suggested that there tended to be much overlap, with the part-time catchment area or geographic distribution closely resembling the full-time catchment area. Thus, while interuniversity comparison in Alberta revealed complementary catchment areas between universities, within university comparison of part- and full-time catchment areas for each university demonstrated that they were not complementary.

Similar investigations of the catchment areas for the universities in the other three provinces resulted in observations which were the reverse of the Alberta observations. In the other three provinces--particularly British Columbia--interuniversity comparisons of catchment areas indicated the universities did not tend to be complementary. However, within-university comparison of part- and full-time catchment areas revealed that there was a tendency for the catchment areas to be complementary within universities.

## PARTICIPATION AND DISTANCE

### Participation-Over-Distance Profile

In the analysis of participation and distance, two types of distance intervals were used. Firstly, unequal distance intervals were used as a surrogate for convenient travel intervals. Tables 10 and 11 summarize the percentage of the prospective student population enrolled or participation by distance from the university in unequal distance or travel time intervals. Examination of Tables 10 and 11 demonstrates the decline in participation with every successive distance interval radiating out from the university. The table data also exhibit various rates of decline for different universities as well as variation within universities.

When viewed as a criterion for success, the relative participation rate of the nine universities served as a measure of distance effectiveness for the universities studied. Consequently, the

participation-over-distance data from Tables 10 and 11 were used in Tables 12 and 13 to rank the nine universities with respect to their relative success at obtaining new students from communities located at the designated distance intervals.

The University of Saskatchewan ranked first for both full-time and part-time students for distances up to 149 miles, after which the University of British Columbia ranked first for the 150 to 349 mile distance interval, followed by the University of Victoria ranking first for distance over 350 miles. The data indicate that the University of British Columbia had a very low participation rate for the first three distance intervals up to 149 miles from Vancouver. Although the University of Victoria had a relatively high participation rate within 25 miles of Victoria, Tables 12 and 13 demonstrate a drop in the relative success of the University of Victoria between distances of 25 to 149 miles from Victoria. There appeared to be little difference between the Universities of Calgary, Lethbridge, Brandon and Regina with respect to their relative success at various distances for both full-time and part-time students. All four universities, with the exception of Regina, ranked from the middle to the lower end of the participation comparison for all five distance intervals. For the University of Regina, the table illustrates that there was a high participation rate at distances close to the university centre; however the university dropped from a rank of two to a rank of six for the 25 to the 74 mile distance interval.

Finally, tables 12 and 13 exhibit a relatively low rank for the University of Manitoba full-time student participation over distance while at the same time a relatively high rank for part-time participation over the same distances.

Table 10

## *FULL-TIME PARTICIPATION RATES BY CONVENIENT **TRAVEL DISTANCES FROM THE UNIVERSITY

| University | 0 - 24 | 25 - 74 | 75 - 149 | 150 - 349 | 350 or more |
|---|---|---|---|---|---|
| Victoria | 1.50 | 0.57 | 0.07 | 0.18 | 0.05 |
| British Columbia | 0.77 | 0.27 | 0.21 | 0.38 | 0.03 |
| Lethbridge | 1.42 | 0.74 | 0.03 | 0.01 | 0.00 |
| Calgary | 1.15 | 0.29 | 0.15 | 0.02 | 0.01 |
| Alberta | 1.30 | 0.76 | 0.47 | 0.15 | 0.01 |
| Saskatchewan | 2.34 | 1.58 | 0.80 | 0.09 | 0.01 |
| Regina | 1.83 | 0.50 | 0.16 | 0.01 | 0.00 |
| Brandon | 0.88 | 0.47 | 0.03 | 0.00 | 0.03 |
| Manitoba | 1.02 | 0.54 | 0.22 | 0.09 | 0.01 |

* Participation Rates: % of prospective students enrolled

** Travel Distances: Miles in "convenient" travel intervals

## Table 11

## *PART-TIME PARTICIPATION RATES BY CONVENIENT **TRAVEL DISTANCES FROM THE UNIVERSITY

| University | 0 - 24 | 25 - 74 | 75 - 149 | 150 - 349 | 350 or more |
|---|---|---|---|---|---|
| Victoria | 0.55 | 0.19 | 0.02 | 0.02 | 0.01 |
| British Columbia | 0.20 | 0.08 | 0.07 | 0.12 | 0.01 |
| Lethbridge | 0.47 | 0.25 | 0.01 | 0.00 | 0.00 |
| Calgary | 0.23 | 0.07 | 0.00 | 0.00 | 0.00 |
| Alberta | 0.33 | 0.12 | 0.15 | 0.03 | 0.00 |
| Saskatchewan | 0.92 | 0.57 | 0.29 | 0.04 | 0.00 |
| Regina | 0.41 | 0.25 | 0.07 | 0.00 | 0.00 |
| Brandon | 0.39 | 0.16 | 0.02 | 0.00 | 0.01 |
| Manitoba | 0.64 | 0.44 | 0.17 | 0.07 | 0.01 |

* Participation Rates: % of prospective students enrolled

** Travel Distances: Miles in "convenient" travel intervals

## Table 12

## UNIVERSITY RANKING BY FULL-TIME PARTICIPATION RATES AND TRAVEL INTERVALS

| University | 0 to 24 miles | 25 to 74 miles | 75 to 149 miles | 150 to 349 miles | Over 350 miles |
|---|---|---|---|---|---|
| Victoria | 3 | 4 | 7 | 2 | 1 |
| British Columbia | 9 | 9 | 4 | 1 | 2.5 |
| Lethbridge | 4 | 3 | 8.5 | 7.5 | 8.5 |
| Calgary | 6 | 8 | 6 | 6 | 5.5 |
| Alberta | 5 | 2 | 2 | 3 | 5.5 |
| Saskatchewan | 1 | 1 | 1 | 4.5 | 5.5 |
| Regina | 2 | 6 | 5 | 7.5 | 8.5 |
| Brandon | 8 | 7 | 8.5 | 9 | 2.5 |
| Manitoba | 7 | 5 | 3 | 4.5 | 5.5 |

Table 13

UNIVERSITY RANKING BY PART-TIME PARTICIPATION RATES AND TRAVEL INTERVALS

| University | 0 to 24 miles | 25 to 74 miles | 75 to 149 miles | 150 to 349 miles | Over 350 miles |
|---|---|---|---|---|---|
| Victoria | 3 | 4 | 6.5 | 5 | 2.5 |
| British Columbia | 9 | 7 | 4.5 | 1 | 2.5 |
| Lethbridge | 4 | 3.5 | 8 | 7.5 | 7 |
| Calgary | 8 | 8 | 9 | 7.5 | 7 |
| Alberta | 7 | 6 | 3 | 4 | 7 |
| Saskatchewan | 1 | 2 | 1 | 3 | 7 |
| Regina | 5 | 3.5 | 4.5 | 7.5 | 7 |
| Brandon | 6 | 5 | 6.5 | 7.5 | 2.5 |
| Manitoba | 2 | 1 | 2 | 2 | 2.5 |

A second analysis of participation over distance involved equal distance intervals of fifty miles each. The literature reported earlier related to human interaction models which attempt to describe the decline of human interaction over distance, prompted the analysis employing equal distance intervals. Tables 14 and 15 provide full- and part-time participation data aggregated into seven fifty-mile distance intervals. The data were used to illustrate the participation over distance profiles illustrated in Figures 22 to 30 inclusive. As noted earlier, the nine universities exhibited a wide range of participation rates with the part-time rates generally lower than the full-time participation rates--all of which declined with distance.

However, after an examination of the participation over distance profiles, two additional features emerged. Firstly, Pearson correlations were calculated between full- and part-time participation rates over the seven distance intervals for each university. With five degrees of freedom per university, all correlations were significant at the 0.01 level. The mean of the nine Pearson correlations between full- and part-time participation for each distance interval, was 0.96. The correlations did not of course take into account the variation of part- and full-time participation between CCS areas within each distance interval. Correlational analyses between full- and part-time particiption for individual CCS areas resulted in part- and full-time participation Pearson correlations significant well below the .01 level which ranged from lows of +0.15 and +0.17 for the University of Regina and the University of Saskatchewan respectively, to a high of +0.87 for the University of Victoria and with a mean of the correlations of +0.39

Table 14

## FULL-TIME PARTICIPATION RATES BY 50 MILE DISTANCE INTERVALS FROM THE UNIVERSITY

| University | 0-49 | 50-99 | 100-149 | 150-199 | 200-249 | 250-299 | 300-349 | 350 or more |
|---|---|---|---|---|---|---|---|---|
| Victoria | 1.348 | 0.484 | 0.056 | 0.128 | 0.173 | 0.215 | 0.140 | 0.047 |
| British Columbia | 0.738 | 0.317 | 0.214 | 0.395 | 0.401 | 0.214 | 0.364 | 0.028 |
| Lethbridge | 1.229 | 0.249 | 0.026 | 0.043 | 0.008 | 0.006 | 0.002 | 0.002 |
| Calgary | 1.062 | 0.241 | 0.139 | 0.222 | 0.030 | 0.017 | 0.018 | 0.007 |
| Alberta | 1.270 | 0.551 | 0.427 | 0.177 | 0.266 | 0.202 | 0.015 | 0.015 |
| Saskatchewan | 2.288 | 1.401 | 0.626 | 0.821 | 0.264 | 0.061 | 0.013 | 0.007 |
| Regina | 1.549 | 0.395 | 0.115 | 0.048 | 0.022 | 0.013 | 0.002 | 0.001 |
| Brandon | 0.699 | 0.319 | 0.022 | 0.024 | 0.002 | 0.008 | 0.0 | 0.032 |
| Manitoba | 0.984 | 0.491 | 0.198 | 0.269 | 0.102 | 0.0 | 0.064 | 0.012 |

Table 15

## PART-TIME PARTICIPATION RATES BY 50 MILE DISTANCE INTERVALS FROM THE UNIVERSITY

| University | 0-49 | 50-99 | 100-149 | 150-199 | 200-249 | 250-299 | 300-349 | 350 or more |
|---|---|---|---|---|---|---|---|---|
| Victoria | 0.484 | 0.178 | 0.012 | 0.018 | 0.022 | 0.018 | 0.028 | 0.006 |
| British Columbia | 0.190 | 0.113 | 0.067 | 0.103 | 0.161 | 0.101 | 0.104 | 0.013 |
| Lethbridge | 0.401 | 0.125 | 0.006 | 0.009 | 0.005 | 0.001 | 0.001 | 0.001 |
| Calgary | 0.213 | 0.032 | 0.004 | 0.003 | 0.002 | 0.002 | 0.002 | 0.000 |
| Alberta | 0.310 | 0.115 | 0.177 | 0.033 | 0.083 | 0.020 | 0.012 | 0.003 |
| Saskatchewan | 0.867 | 0.707 | 0.170 | 0.305 | 0.205 | 0.014 | 0.004 | 0.003 |
| Regina | 0.374 | 0.182 | 0.055 | 0.009 | 0.007 | 0.0 | 0.0 | 0.0 |
| Brandon | 0.309 | 0.170 | 0.010 | 0.016 | 0.002 | 0.012 | 0.0 | 0.006 |
| Manitoba | 0.626 | 0.355 | 0.145 | 0.169 | 0.061 | 0.0 | 0.067 | 0.012 |

for the nine universities. The Pearson correlations of the other six universities were as follows: the University of British Columbia at +0.52; the University of Lethbridge at +0.53; the University of Calgary at +0.41; the University of Alberta at +0.57; Brandon University at +0.30; and the University of Manitoba at +0.62.

Secondly, of the nine participation-over-distance profiles exhibited in Figures 22 to 30, five of the profiles reveal a pronounced drop in participation over the third distance interval and a subsequent rise in participation levels in the fourth interval. The five universities for which the observation was made included: the University of Victoria, the University of British Columbia, the University of Lethbridge, the University of Saskatchewan, and the University of Manitoba (Figures 22, 23, 24, 27, and 30). The third distance interval in which the drops in participation took place, represented those CCS areas within 100 to 149 miles from the university centre. In addition, Figure 23 illustrates that, for the University of British Columbia, a second drop in participation rate appears to have occurred within the 250 to 299 mile interval. As discussed in Chapter 3, an upward adjustment was made to distances which included travel between the British Columbia mainland and Vancouver Island, which in turn, had the greatest impact on the distances used for the University of Victoria and the University of British Columbia. When the participation-over-distance profiles were developed for the University of Victoria and the University of British Columbia with the distance left unadjusted, the drop in participation and its subsequent rise would have occurred between 50 and 99 miles and between 100 and 149 miles respectively, rather than between the 100 and 149 miles, and 150 and 199 miles exhibited in Figures 22, 23, 24, 27 and 30.

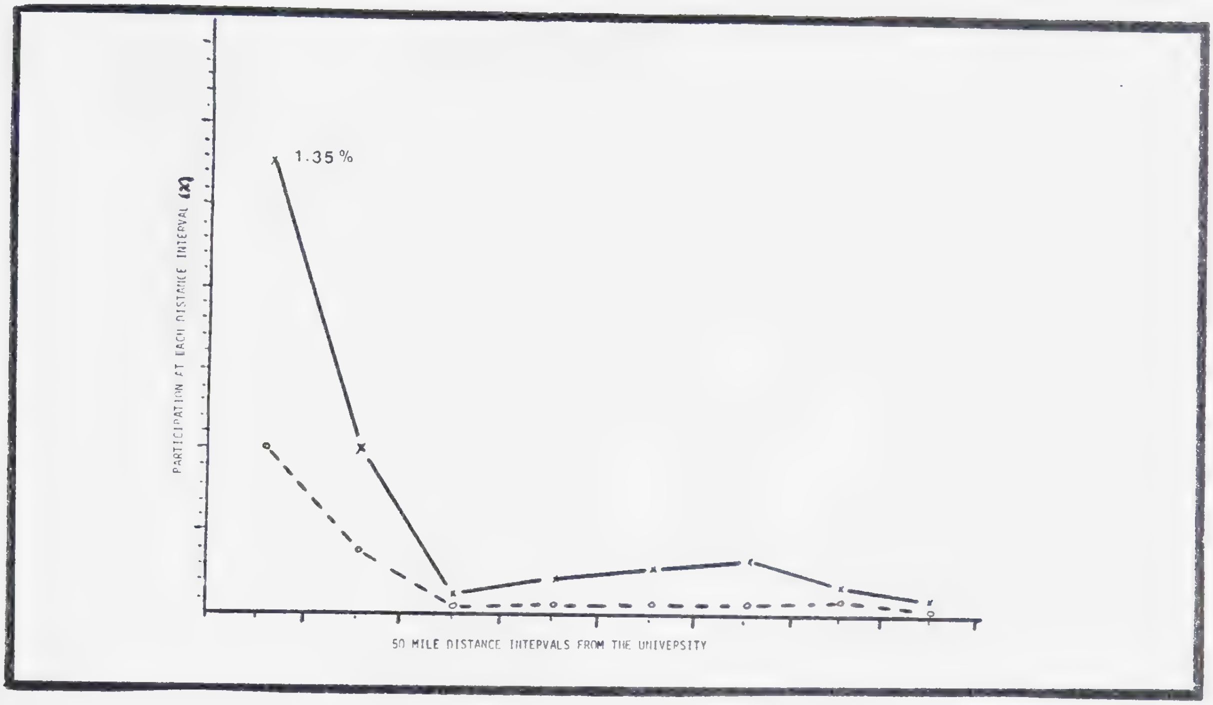

Figure 22 University of Victoria Participation Over Distance
——— Full-Time Participation; ----- Part-Time Participation

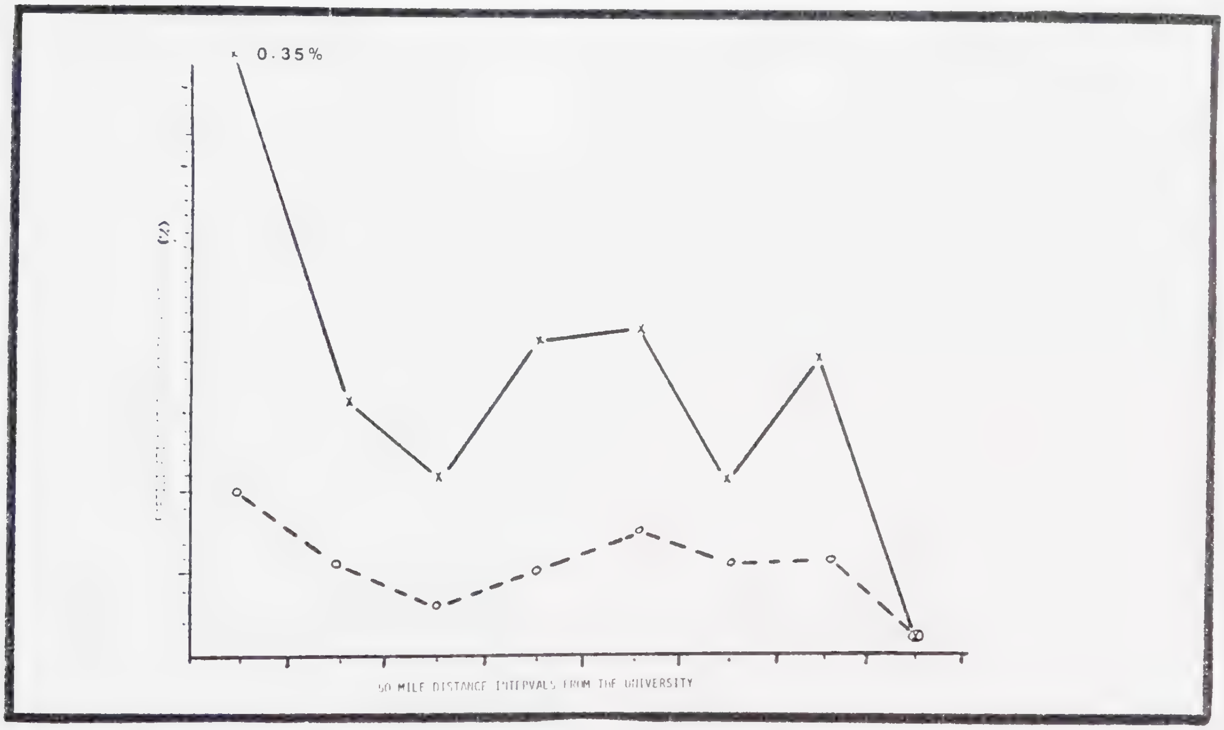

Figure 23 University of British Columbia Participation Over Distance
——— Full-Time Participation; ----- Part-Time Participation

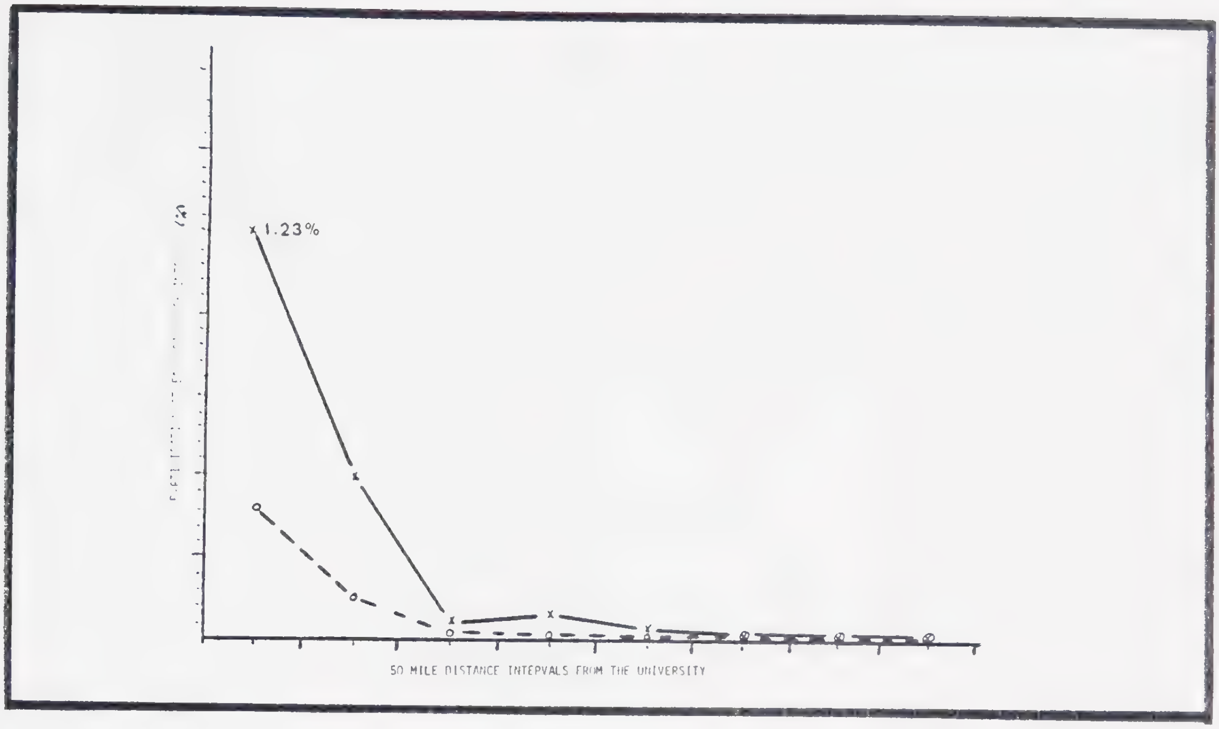

Figure 24 University of Lethbridge Participation Over Distance
_____ Full-Time Participation; ----- Part-Time Participation

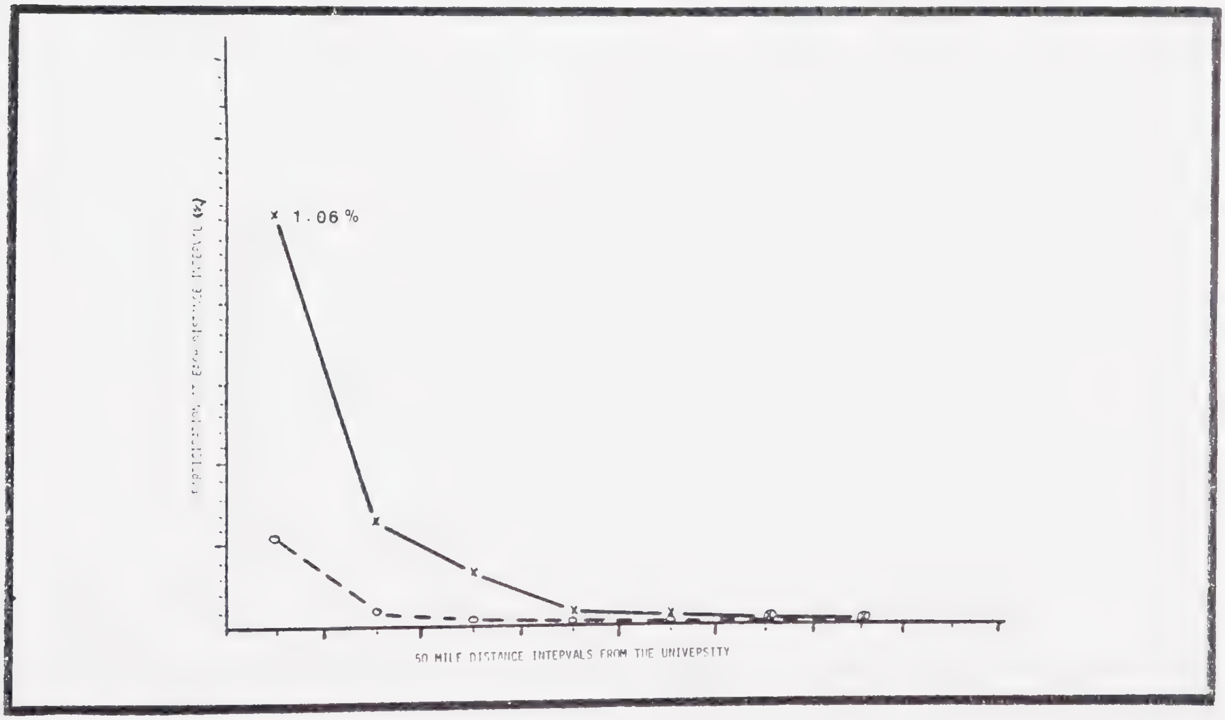

Figure 25 University of Calgary Participation Over Distance
_____ Full-Time Participation; ----- Part-Time Participation

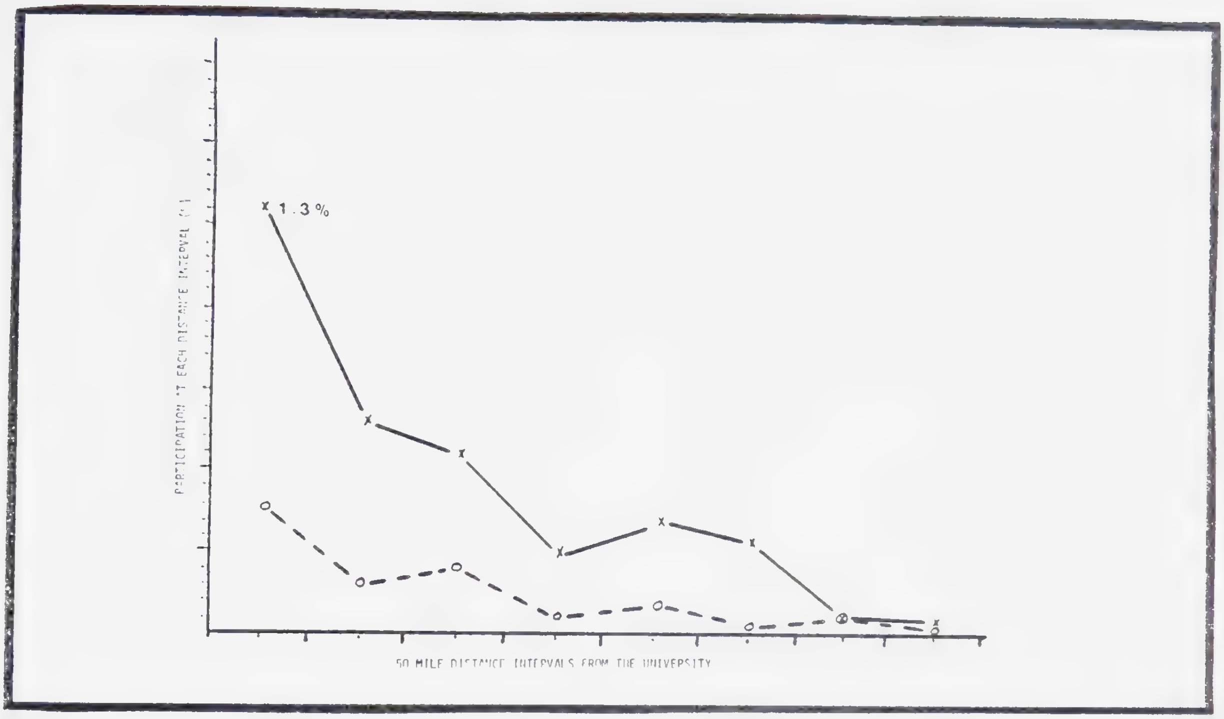

Figure 26 University of Alberta Participation Over Distance
_____ Full-Time Participation; ----- Part-Time Participation

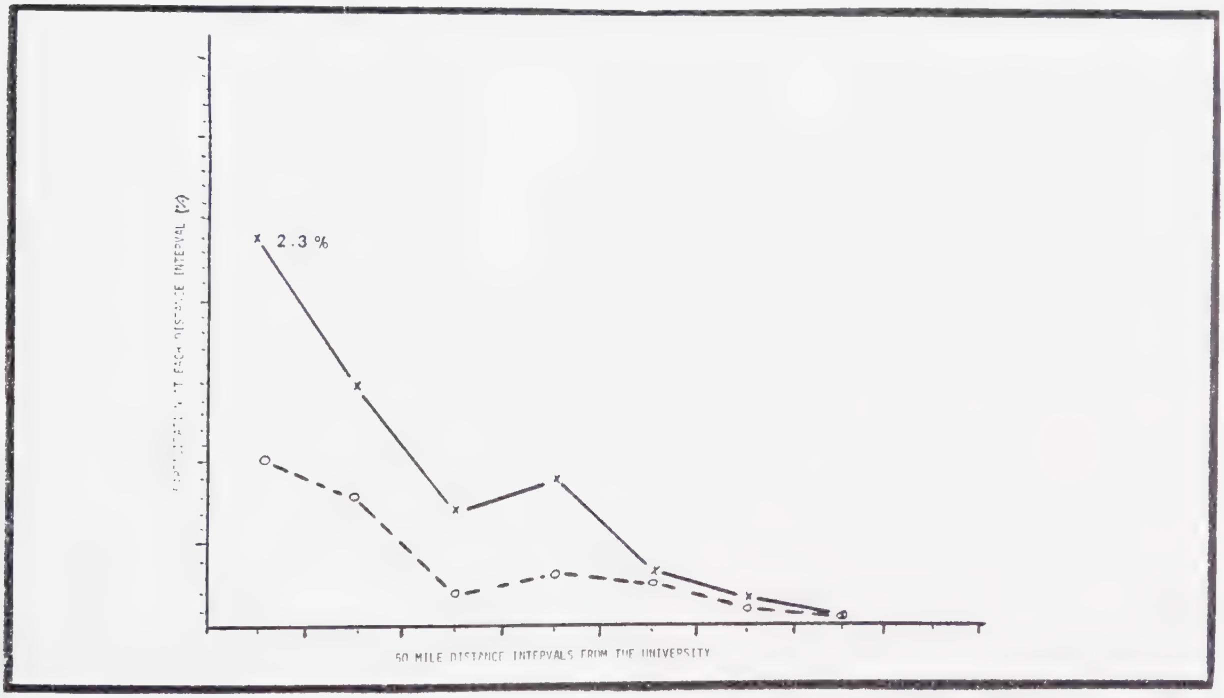

Figure 27 University of Saskatchewan Participation Over Distance
_____ Full-Time Participation; ----- Part-Time Participation

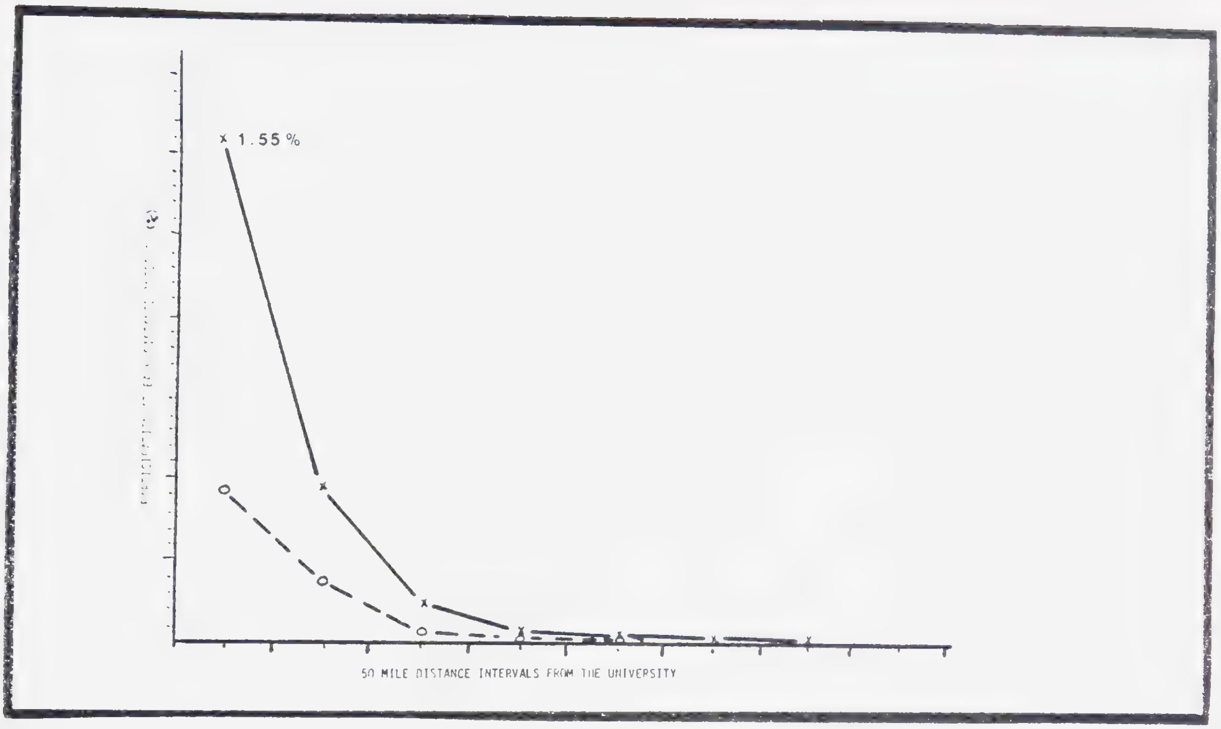

Figure 28 University of Regina Participation Over Distance
——— Full-Time Participation; ----- Part-Time Participation

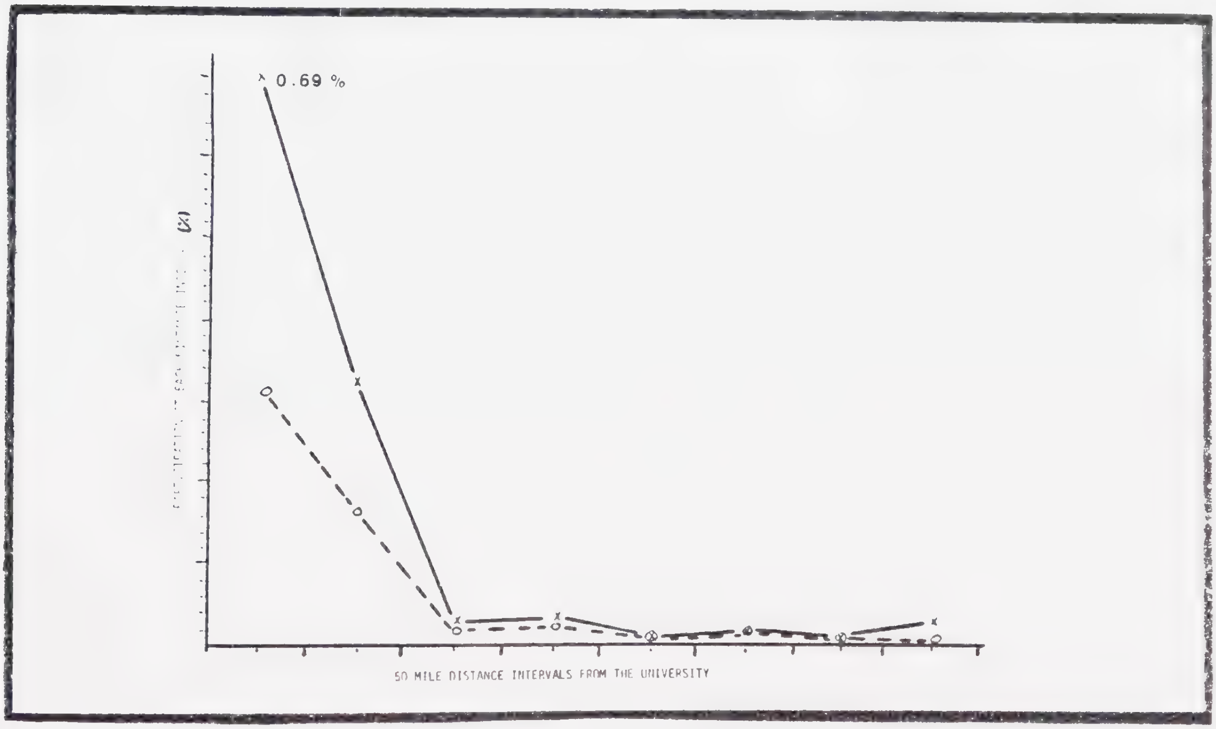

Figure 29 Brandon University Participation Over Distance
——— Full-Time Participation; ----- Part-Time Participation

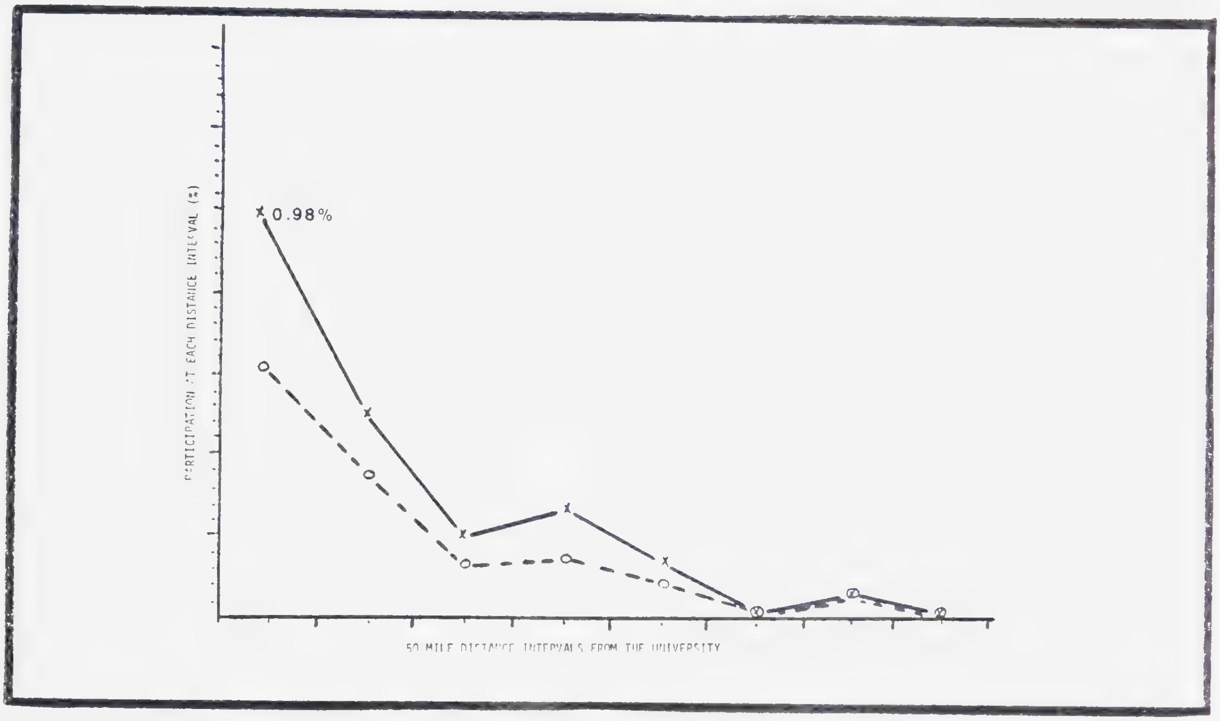

Figure 30 University of Manitoba Participation Over Distance

_____ Full-Time Participation; ----- Part-Time Participation

The University of Alberta profile displayed in Figure 25, demonstrates two points of departure from the downward trend rather than the single drop at the 100 to 149 mile interval. The first drop in the University of Alberta profile occurred in the 50 to 99 mile interval with the second occurring in the 150 to 199 mile interval. The remaining three universities in Calgary, Regina, and Brandon with their profiles illustrated in Figures 25, 28 and 30 respectively, had relatively low participation rates and visually smooth profiles with no marked deviations from visual downward trends with distance.

However, a secondary investigation focussed on the abnormal but consistent drop in participation which deviated from trends in participation over distance from the university centre. A list of the major postsecondary institutions in western Canada was prepared as illustrated in Table 16. It would appear from Table 16 that in the distance intervals where seemingly abnormal and sharp declines in participation rates occurred, in every case one or more postsecondary institutions were located. Further, when upward adjustments were made for the University of British Columbia to compensate for university home area distances through mountainous terrain similar to the adjustments made for the Vancouver Island to mainland water crossing, the second "dip" in the University of British Columbia participation rates occurred in the 250 to 299 mile interval--within the same interval where the Okanagan Region Community College was located.

## Gravity Model Predictions

Tables 17 and 18 summarize the difference between the participation rates predicted by a form of the Gravity Model for human interaction, and the actual participation rates experienced by each university over the

Table 16

MAJOR POSTSECONDARY INSTITUTIONS (ENROLLMENTS GREATER THAN 500) BY THEIR LOCATION WITHIN UNIVERSITY CATCHMENT AREAS

| University | Institution Location 100 to 149 miles | Postsecondary Institution |
|---|---|---|
| Victoria | Vancouver | University of British Columbia |
| | | Simon Fraser University |
| | | B. C. Institute of Technology |
| | | Douglas College |
| | | Vancouver City College |
| British Columbia | Nanaimo | Malaspina College |
| | Victoria | Camosun College |
| | | University of Victoria |
| Lethbridge | Calgary | University of Calgary |
| | | Mount Royal Community College |
| | | Southern Alta. Institute of Technology |
| | Medicine Hat | Medicine Hat Community College |
| Saskatchewan | Regina | University of Regina |
| | | Wascana Inst. of Applied Arts & Tech. |
| | Moose Jaw | Saskatchewan Technical Institute |
| Manitoba | Brandon | Brandon University |
| | 50 to 99 miles | |
| Alberta | Red Deer | Red Deer Community College |
| | 150 to 199 miles | |
| Alberta | Calgary | University of Calgary |
| | | Mount Royal Community College |
| | | Southern Alta. Institute of Technology |
| | 250 to 299 miles | |
| *British Columbia | Kelowna | Okanagan Region Community College |

* Distance adjusted upward by 80 miles to account for mountainous terrain.

## Table 17

### *PREDICTED $(\hat{y})$ VERSUS ACTUAL (y) FULL-TIME PARTICIPATION RATES (%) BY UNIVERSITY TO HOME AREA DISTANCES

| | | 50 Mile Distance Intervals | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 to 99 | | | 100 to 149 | | | 150 - 199 | | | 200 - 249 | | | 250 - 299 | | | 300 - 349 | | |
| University | C | $\hat{y}$ | y | Error** | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error |
| Victoria | 33.7 | 0.45 | 0.48 | -.03 | 0.27 | 0.06 | +.21 | 0.19 | 0.13 | +.06 | 0.15 | 0.17 | -.02 | 0.12 | 0.22 | -.10 | 0.10 | 0.14 | -.04 |
| British Columbia | 18.5 | 0.25 | 0.32 | -.07 | 0.15 | 0.20 | -.05 | 0.11 | 0.40 | -.29 | 0.08 | 0.40 | -.32 | 0.07 | 0.21 | -.14 | 0.06 | 0.36 | -.30 |
| Lethbridge | 30.7 | 0.41 | 0.25 | +.16 | 0.25 | 0.04 | +.21 | 0.18 | 0.01 | +.17 | 0.14 | 0.01 | +.13 | 0.18 | 0.00 | +.18 | 0.10 | 0.00 | +.10 |
| Calgary | 26.6 | 0.36 | 0.24 | +.12 | 0.21 | 0.14 | +.07 | 0.15 | 0.02 | +.13 | 0.12 | 0.03 | +.09 | 0.10 | 0.02 | +.08 | 0.08 | 0.02 | +.06 |
| Alberta | 31.8 | 0.42 | 0.55 | -.13 | 0.25 | 0.43 | -.18 | 0.18 | 0.12 | +.06 | 0.18 | 0.27 | -.09 | 0.12 | 0.27 | -.15 | 0.10 | 0.20 | -.10 |
| Saskatchewan | 57.2 | 0.76 | 1.4 | -1.4 | 0.46 | 0.63 | -.17 | 0.33 | 0.82 | -.49 | 0.25 | 0.26 | -.01 | 0.21 | 0.21 | 0.00 | 0.18 | 0.18 | 0.0 |
| Regina | 38.7 | 0.52 | 0.40 | +.12 | 0.31 | 0.12 | +.19 | 0.22 | 0.05 | +.17 | 0.17 | 0.02 | +.15 | 0.14 | 0.01 | +.13 | 0.12 | 0.0 | +.12 |
| Brandon | 17.5 | 0.23 | 0.32 | -.09 | 0.14 | 0.02 | +.12 | 0.10 | 0.02 | +.08 | 0.08 | 0.0 | +0.8 | 0.06 | 0.0 | +.06 | 0.05 | 0.0 | +.05 |
| Manitoba | 24.6 | 0.33 | 0.49 | -.16 | 0.20 | 0.20 | 0.0 | 0.14 | 0.27 | -.13 | 0.11 | 0.10 | +.11 | 0.09 | 0.0 | +.09 | 0.08 | 0.01 | +.07 |

* Predicted from Gravity formulation: Participation = C/D

Where Participation = New registrants from interval D/Prosp. St's. in interval D x 100.
D = Midpoint of distance interval from the university
C = Intercept constant derived from distance interval 0 - 49 miles

** Error = $\hat{y} - y$

Table 18

*PREDICTED $(\hat{y})$ VERSUS ACTUAL (y) PART-TIME PARTICIPATION RATES (%)
BY UNIVERSITY TO HOME AREA DISTANCES

| | | 50 Mile Distance Intervals | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 to 99 | | | 100 to 149 | | | 150 - 199 | | | 200 - 249 | | | 250 - 299 | | | 300 - 349 | | |
| University | C | $\hat{y}$ | y | Error** | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error | $\hat{y}$ | y | Error |
| Victoria | 12.1 | .161 | .178 | -.017 | .097 | .012 | +.085 | .069 | .018 | +.051 | .054 | .022 | +.032 | .044 | .018 | +.026 | .037 | .028 | +.009 |
| British Columbia | 4.8 | .064 | .113 | +.049 | .038 | .067 | -.029 | .027 | .103 | -.076 | .021 | .161 | -.14 | .004 | .101 | -.097 | .015 | .104 | -.089 |
| Lethbridge | 10.0 | .133 | .125 | +.008 | .080 | .006 | +.074 | .057 | .009 | +.048 | .044 | .005 | +.039 | .036 | .001 | +.035 | .030 | .001 | +.029 |
| Calgary | 5.3 | .071 | .032 | +.039 | .042 | .004 | +.038 | .030 | .003 | +.027 | .024 | .002 | +.022 | .019 | .002 | +.017 | .016 | .002 | +.014 |
| Alberta | 7.8 | .104 | .115 | -.011 | .062 | .177 | -.115 | .045 | .033 | +.012 | .035 | .083 | -.048 | .028 | .020 | +.008 | .024 | .012 | +.012 |
| Saskatchewan | 21.7 | .289 | .707 | -.418 | .174 | .305 | -.131 | .124 | .205 | -.081 | .096 | .014 | +.082 | .079 | .004 | +.075 | .067 | .003 | +.064 |
| Regina | 9.4 | .125 | .182 | -.057 | .076 | .055 | +.021 | .054 | .009 | +.045 | .042 | .007 | +.04 | .034 | 0.00 | +.039 | .029 | 0.00 | +.029 |
| Brandon | 7.7 | .103 | .170 | -.067 | .062 | .010 | +.052 | .044 | .016 | +.028 | .034 | .002 | +.032 | .028 | .012 | +.016 | .024 | 0.00 | +.024 |
| Manitoba | 15.7 | .209 | .355 | -.146 | .126 | .145 | -.019 | .090 | .169 | -.079 | .070 | .061 | +.009 | .057 | 0.00 | +.057 | .048 | .067 | -.019 |

* Predicted from Gravity formulation: Participation = C/D

Where Participation = New registrants from interval D/Prosp. St's. in interval D x 100.
D = Midpoint of distance interval from the university
C = Intercept constant derived from distance interval 0 - 49 miles

** Error = $\hat{y} - y$

fifty mile distance intervals. It was determined early in the analysis that the use of distance rather than the square of the distance was most appropriate for the application of the model in this study.

Full-Time Participation. Visual examination of Table 16 revealed that the gravity model tended generally to over-predict for full-time participation for most distance intervals when it was applied to the University of British Columbia, the University of Alberta, and the University of Saskatchewan, and tended to underpredict for the University of Lethbridge, the University of Calgary, the University of Regina, and Brandon University. For Brandon University, the model over-predicted for the 50 to 99 mile interval; however, the model under-predicted for the remaining distance intervals. For the University of Victoria, the model under-predicted full-time participation for the distance interval 50 to 99 miles while over-predicting for the next two distance intervals (100 to 149 and 150 to 199 miles) and then again under-predicting for distances 200 miles and greater. For the University of Manitoba, the model under-predicted full-time participation for the first and third intervals and over-predicted for the remaining distance intervals over 199 miles from Winnipeg.

Part-Time Participation. An examination of the prediction error for part-time participation revealed an under-prediction over all distance intervals for the University of British Columbia and an over-prediction of participation at most distance intervals for the University of Victoria, the University of Lethbridge, the University of Calgary, the University of Regina and Brandon University. Both the University of Victoria and Brandon University were under-predicted for

the 50 to 99 mile interval and over-predicted for distances of 100 miles and greater from the university centres.

The remaining three universities of Alberta, Saskatchewan and Manitoba tended to be under-predicted by the model for the first two to three intervals and then over-predicted for further distances. For the University of Saskatchewan and the University of Manitoba, the point between under-prediction and over-prediction was between the third and fourth distance intervals or at approximately 149 miles from the university centres. For the University of Manitoba the point between over- and under-prediction occurred between the fourth and fifth intervals or at approximately 199 miles.

Findings

Examination of: (a) participation and distance data, (b) the ranking of the nine universities by their relative participation rates at various distances, (c) the analysis of participation over distance for each university, and (d)) the application of a form of the gravity model for predicting participation over distance, led to the following observations:

Observation no. 1. When universities were ranked by participation for each distance interval, the University of Lethbridge, the University of Calgary, the University of Regina, and Brandon University exhibited similar patterns of relatively low ranking for all distance intervals, with the exception of the University of Regina's rank of 2 in the 0 to 24 mile distance interval for full-time participation.

Observation no. 2. The University of Manitoba exhibited a very low full-time participation ranking over most of the distance intervals but

also exhibited a high part-time participation ranking over the same distance intervals.

Observation no. 3. The University of Saskatchewan and the University of British Columbia rankings changed in opposite directions over distance. In the first three distance intervals for both full- and part-time participation, the University of Saskatchewan was ranked very high while the University of British Columbia was ranked very low; however, the University of Saskatchewan rankings then experienced a sharp decline, while the University of British Columbia rankings improved substantially.

Observation no. 4. The mean of the correlations of all nine universities between full- and part-time participation for distance intervals, was +0.96. However, when the variation between the individual CCS areas within the distance intervals was taken into consideration, the correlation between part- and full-time participation ranged from +0.15 to +0.87 with an overall mean of +0.39 for all nine universities.

Observation no. 5. Six of the nine participation-over-distance profiles for the universities, demonstrated pronounced declines as obvious visual deviations from the participation-over-distance trends. Five of the universities experienced the reduction in participation at the 100 to 149 mile interval while the University of Alberta experienced a drop in participation at the 50 to 99 mile interval and the 150 to 199 mile interval with the University of British Columbia experiencing a sharp dip in participation at the 150 to 299 mile interval.

# NO-RESPONSE CENSUS CONSOLIDATED SUBDIVISION (CCS) AREAS

In an investigation of participation and geographic orientation, data were prepared relating to the CCS or home areas from which there were no prospective students enrolled at the university under investigation. In an analysis of the no-response CCS areas, maps--Figures 31 to 39 inclusive--were prepared for each university to illustrate the spatial relationship of each area to the university being examined. Each no-response CCS area was coded by the CCS identification number to facilitate further detailed analysis at a later date. In addition, the symbol placed at each no-response CCS area location roughly illustrates the number of prospective students in the area to permit a quick assessment of the potential of each area. Subsequently, Table 19 was prepared to summarize the data for further analysis.

The analysis involved the application of three criteria to permit the ranking of the nine universities with respect to the degree of success they had in creating and maintaining responsive CCS areas.

1. The first criterion used was the percentage of no-response CCS areas identified for each university with the nine universities ranked from most successful to least successful in the left hand column of Table 21.

2. The second criterion involved the potential of the no-response CCS areas as indicated by the number of prospective students located in each area. Thus the universities were ranked in the middle column of Table 21 from the most successful to the least successful on the basis of the no-response area potential or number of prospective students located

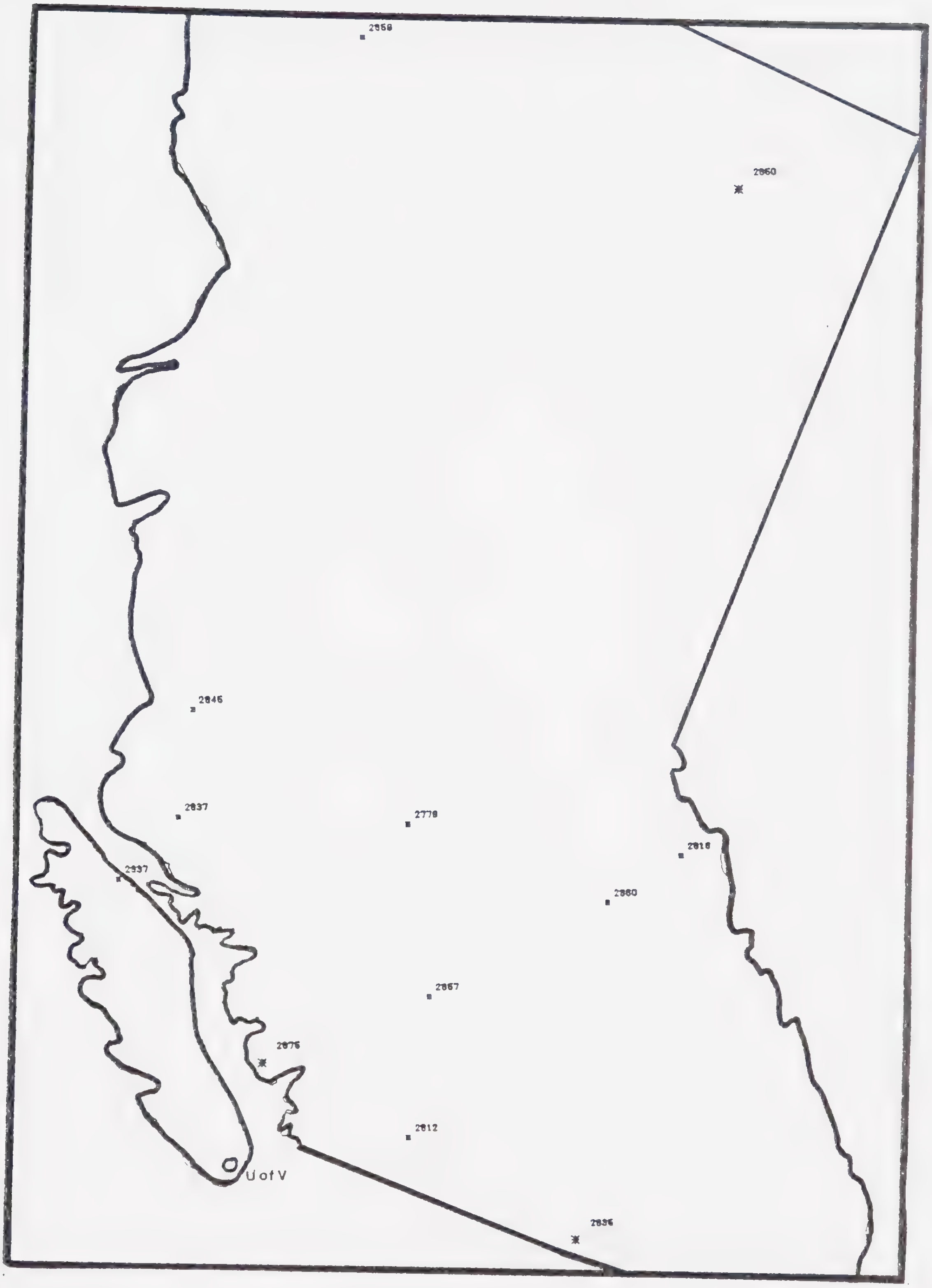

Figure 31 University of Victoria No-Response CCS Areas
Prospective Students: · less than 300 ■ 300 to 1,500 ✱ over 1500

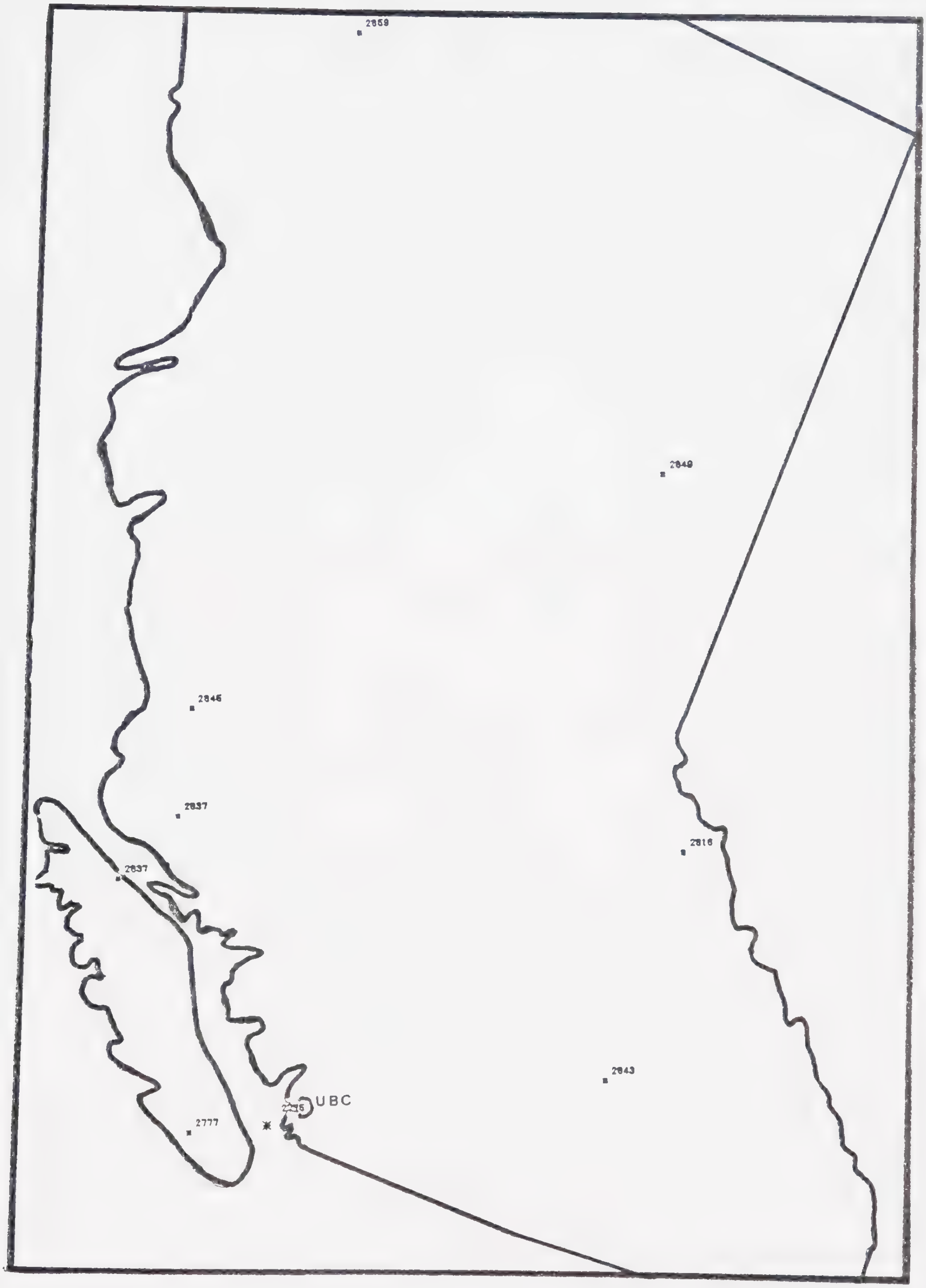

Figure 32 University of British Columbia No-Response CCS Areas
Prospective Students: · less than 300 ▪ 300 to 1,500 ✱ over 1500

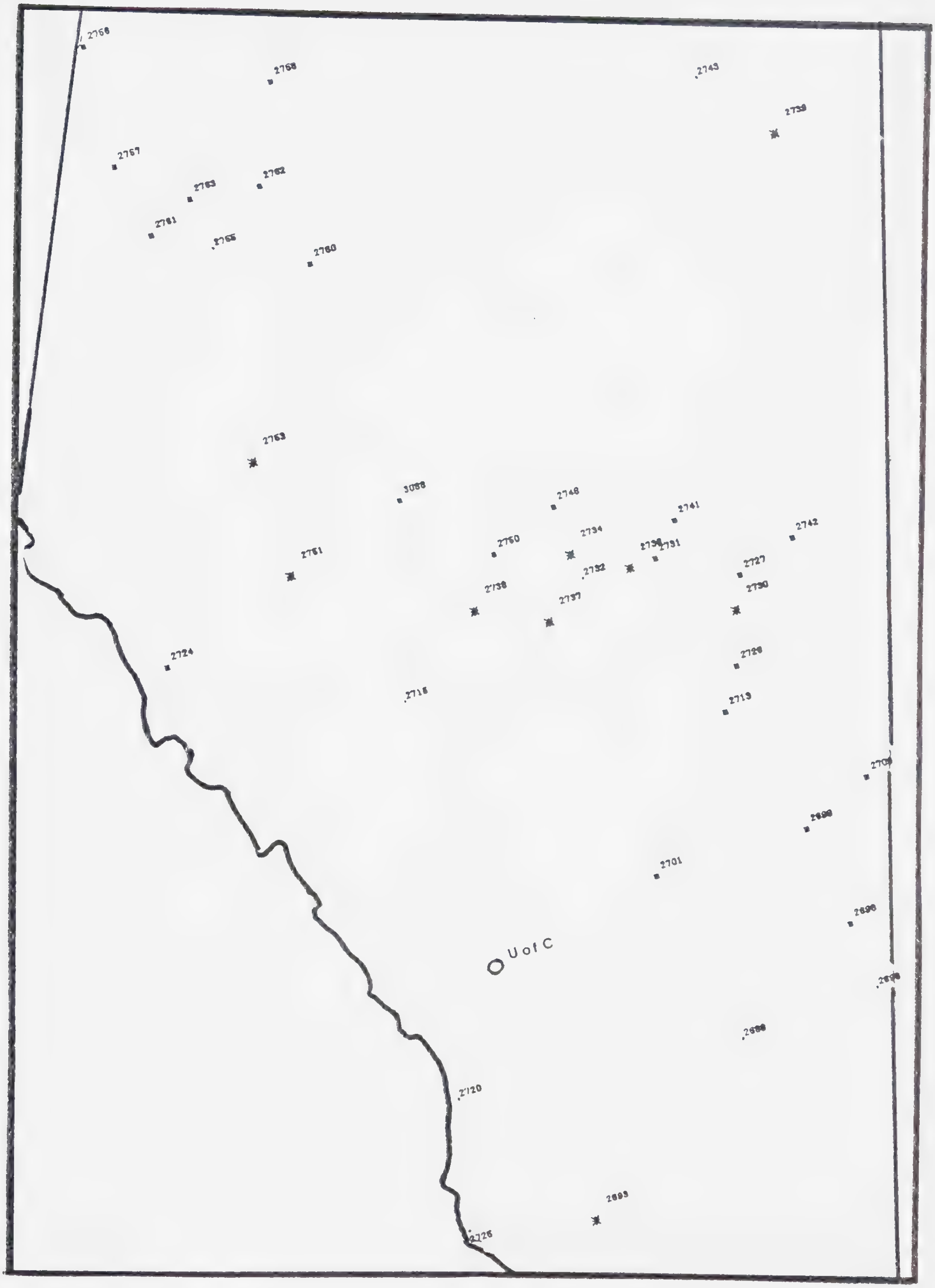

Figure 33 University of Calgary No-Response CCS Areas
Prospective Students: • less than 300 ▪ 300 to 1,500 ✱ over 1500

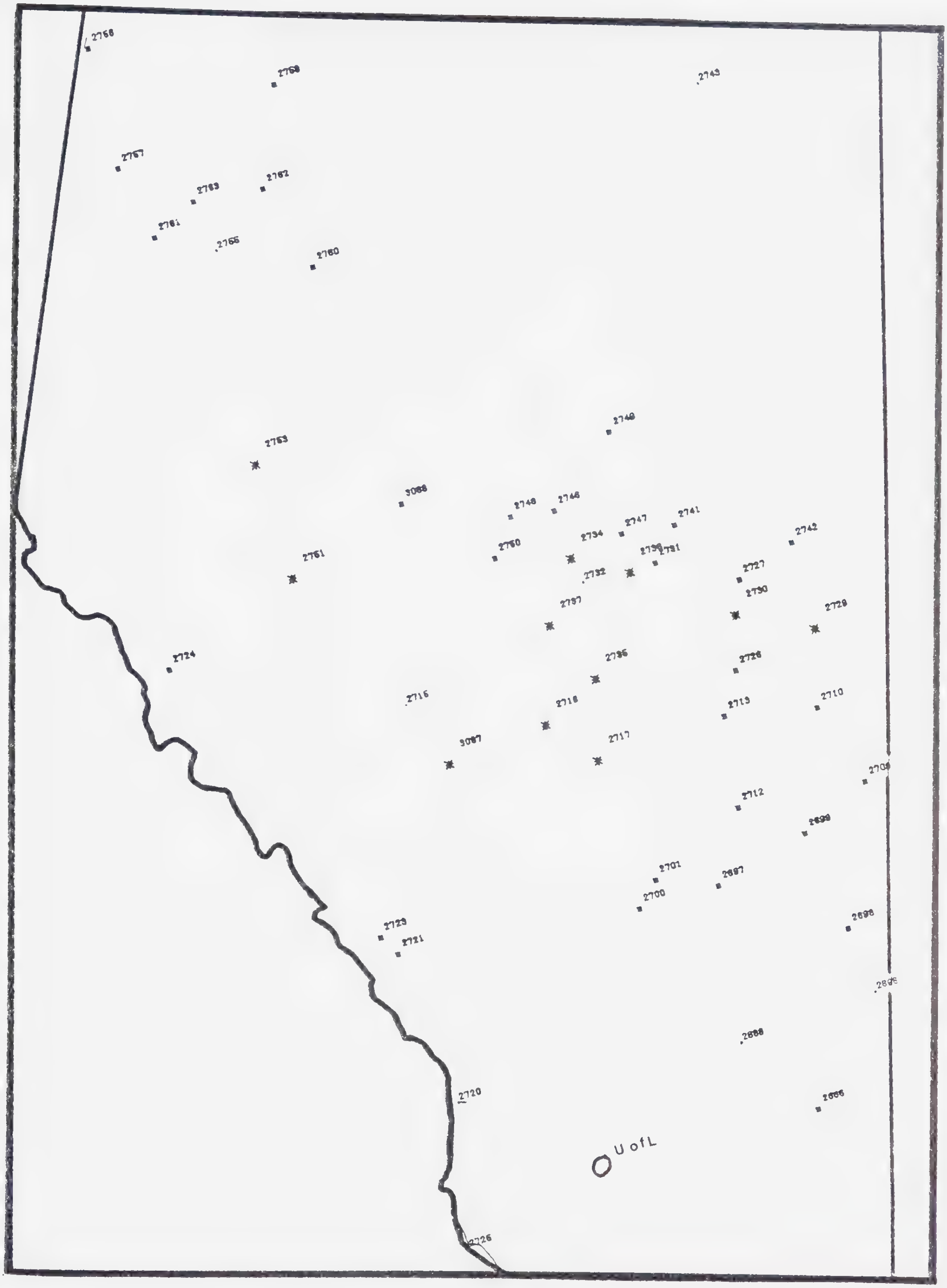

Figure 34 University of **Lethbridge** No-Response CCS Areas
Prospective Students: · less than 300 ▪ 300 to 1,500 ✱ over 1500

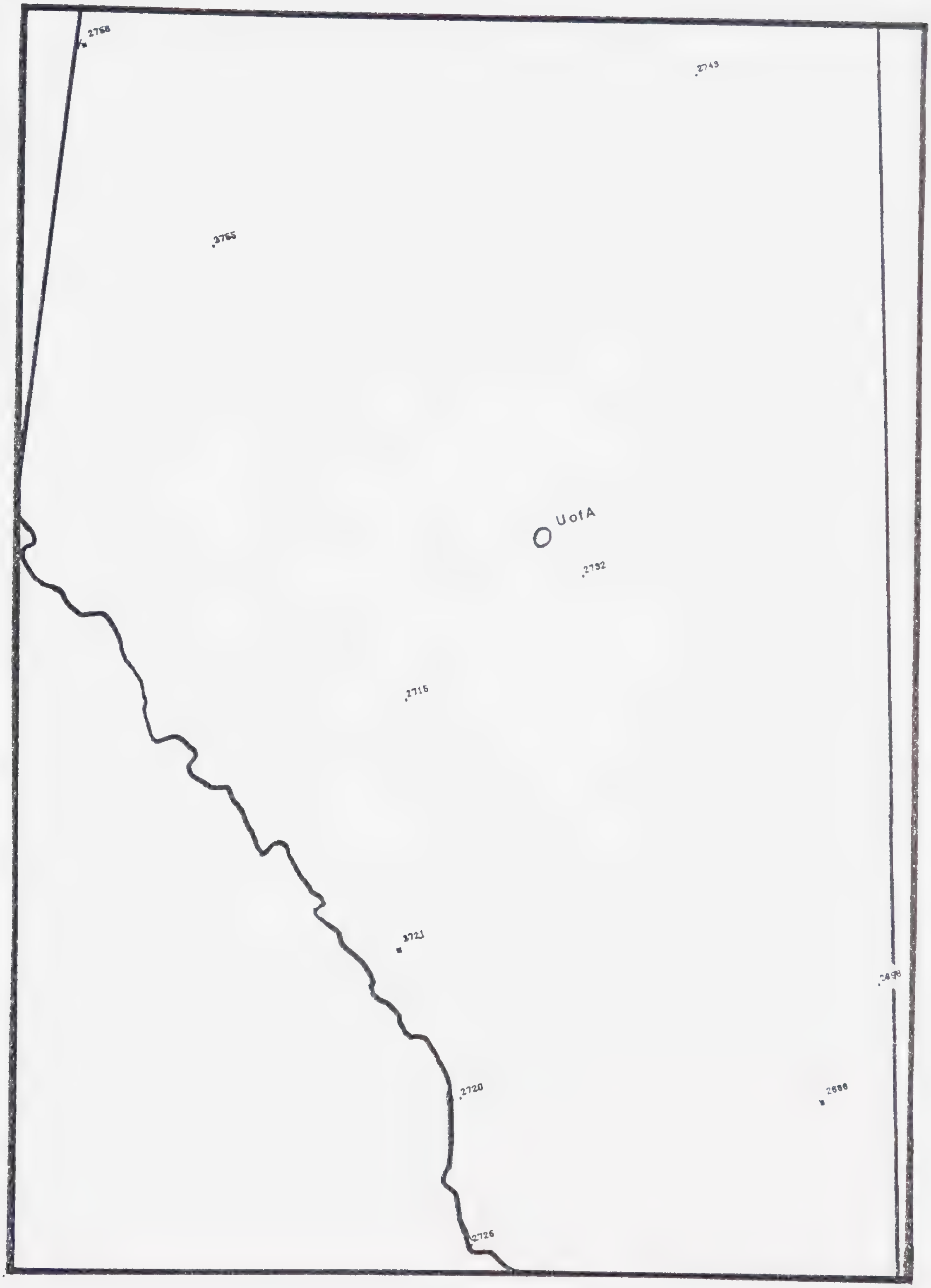

Figure 35 University of Alberta No-Response CCS Areas
Prospective Students: · less than 300 ■ 300 to 1,500 * over 1500

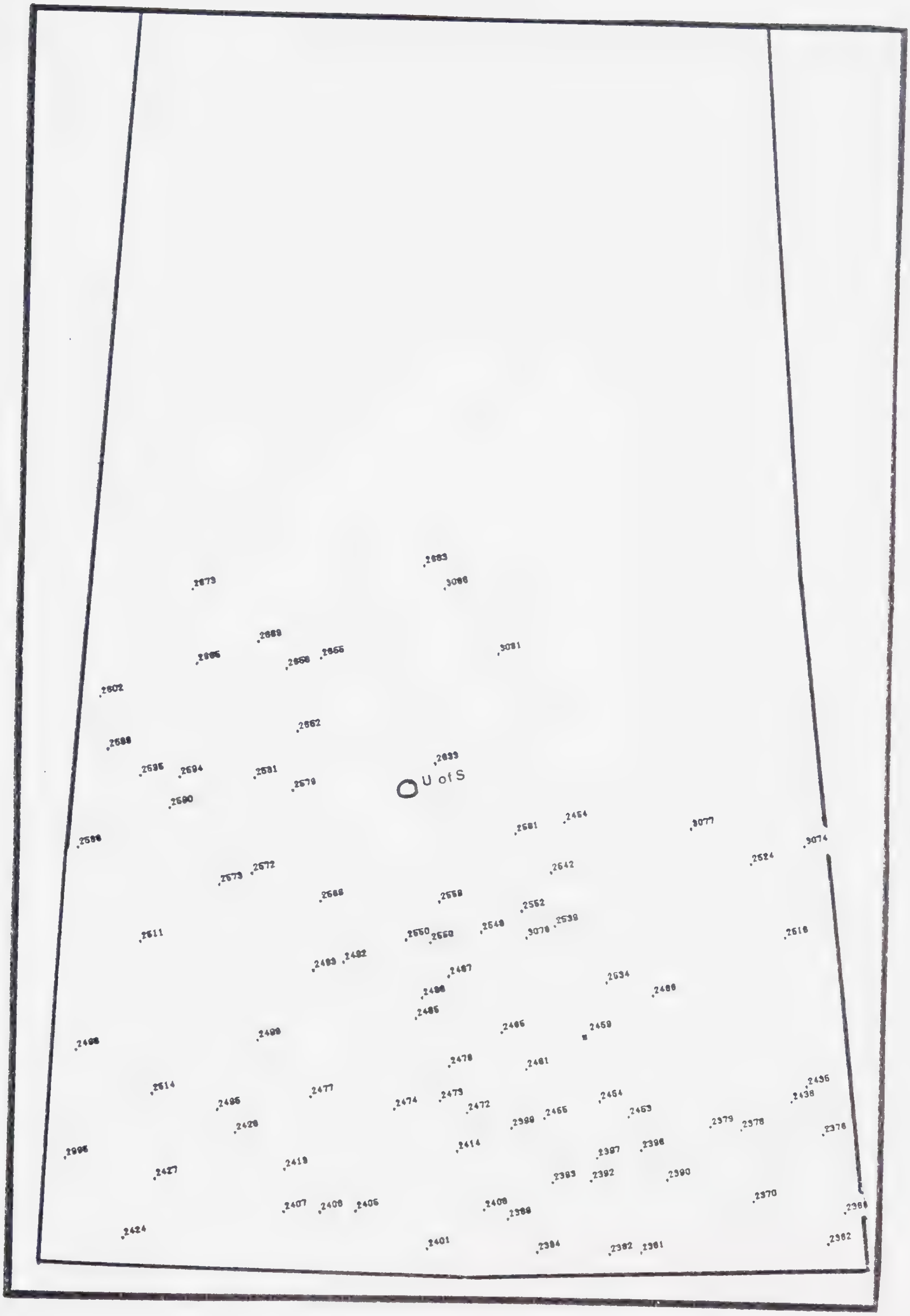

Figure 36 University of Saskatchewan No-Response CCS Areas
Prospective Students: · less than 300 ▪ 300 to 1,500 * over 1500

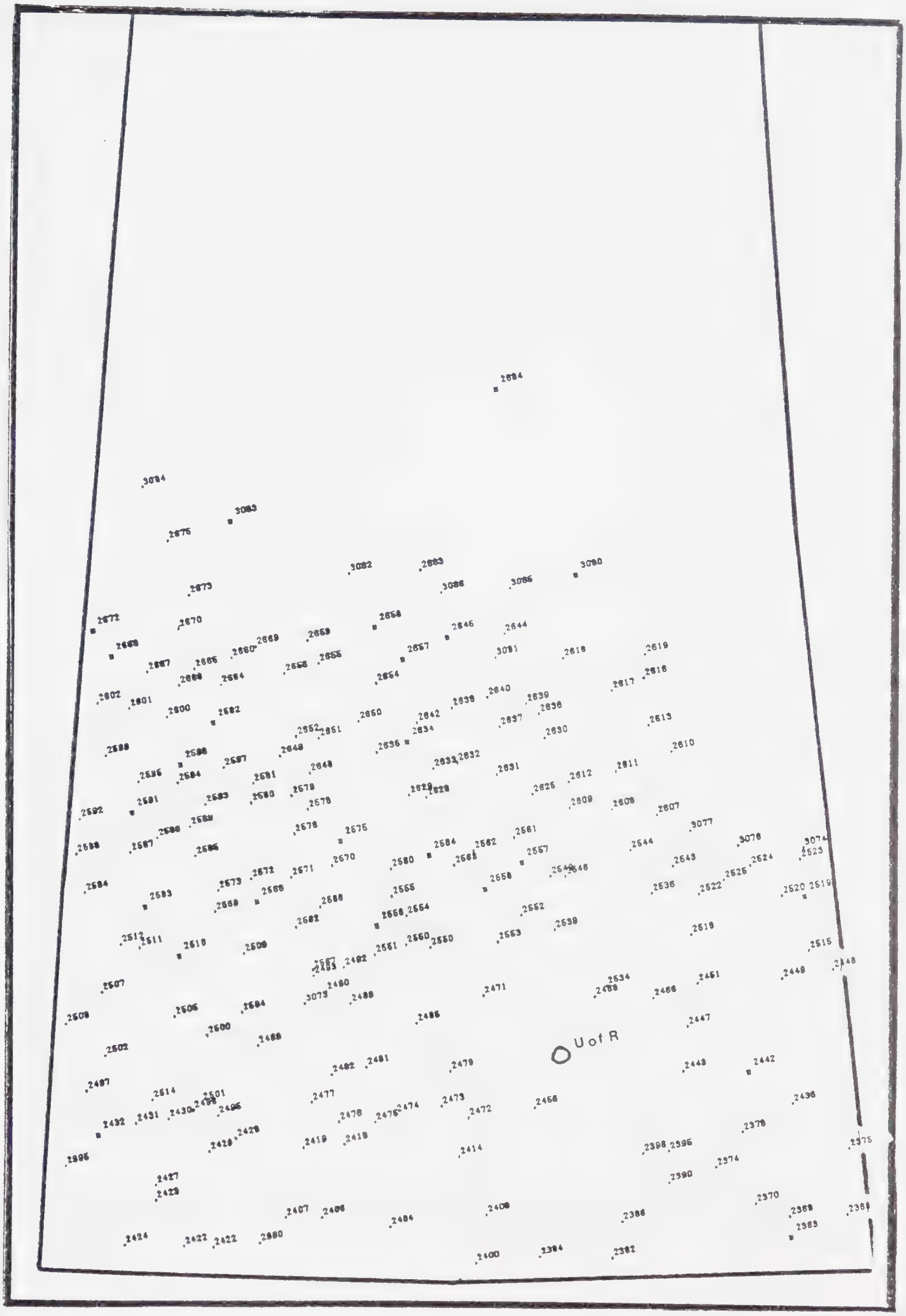

Figure 37 University of Regina No-Response CCS Areas
Prospective Students: · less than 300 ▪ 300 to 1,500 ✱ over 1500

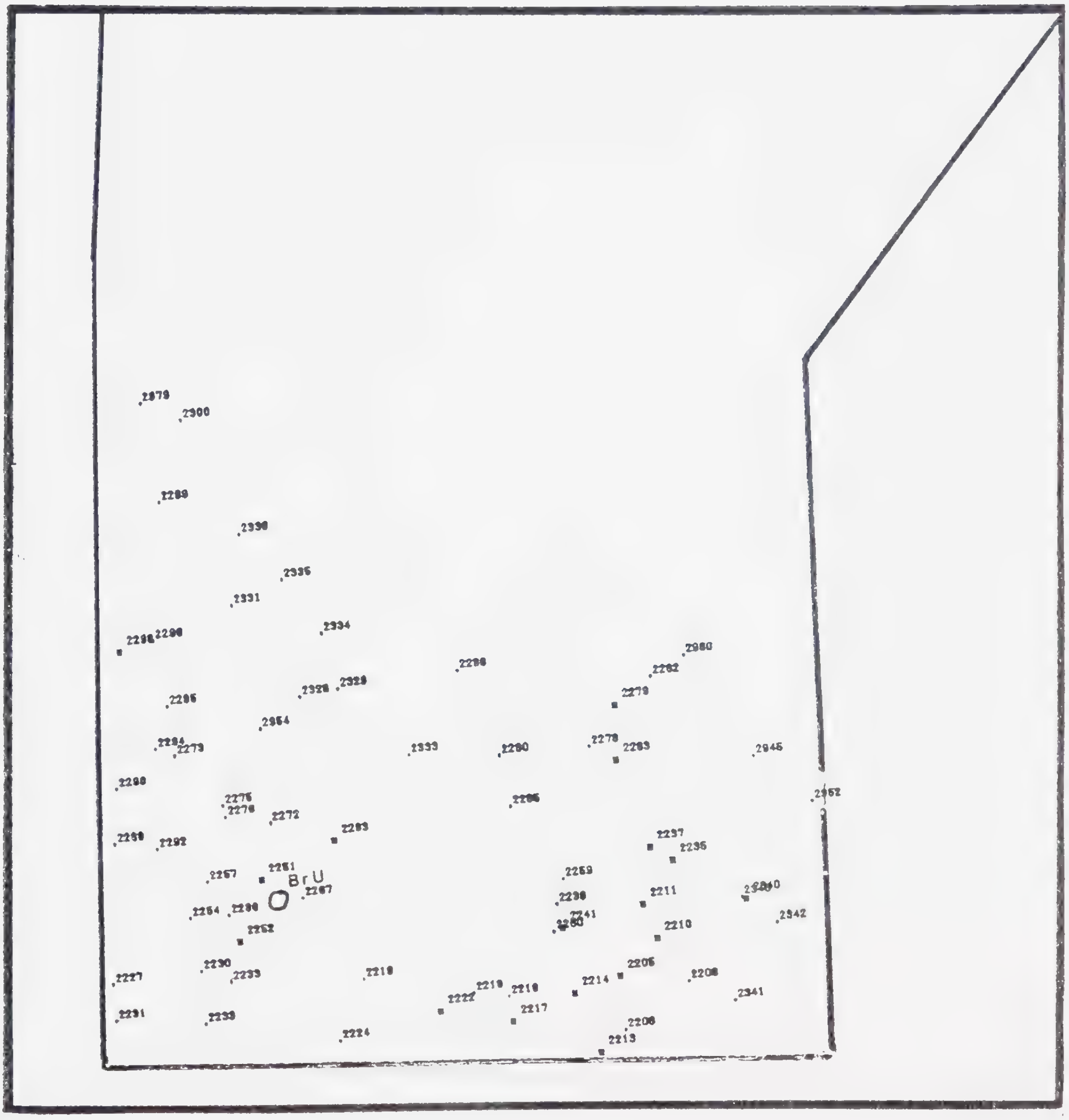

Figure 38 Brandon University No-Response CCS Areas
Prospective Students: · less than 300 ▪ 300 to 1,500 ✱ over 1500

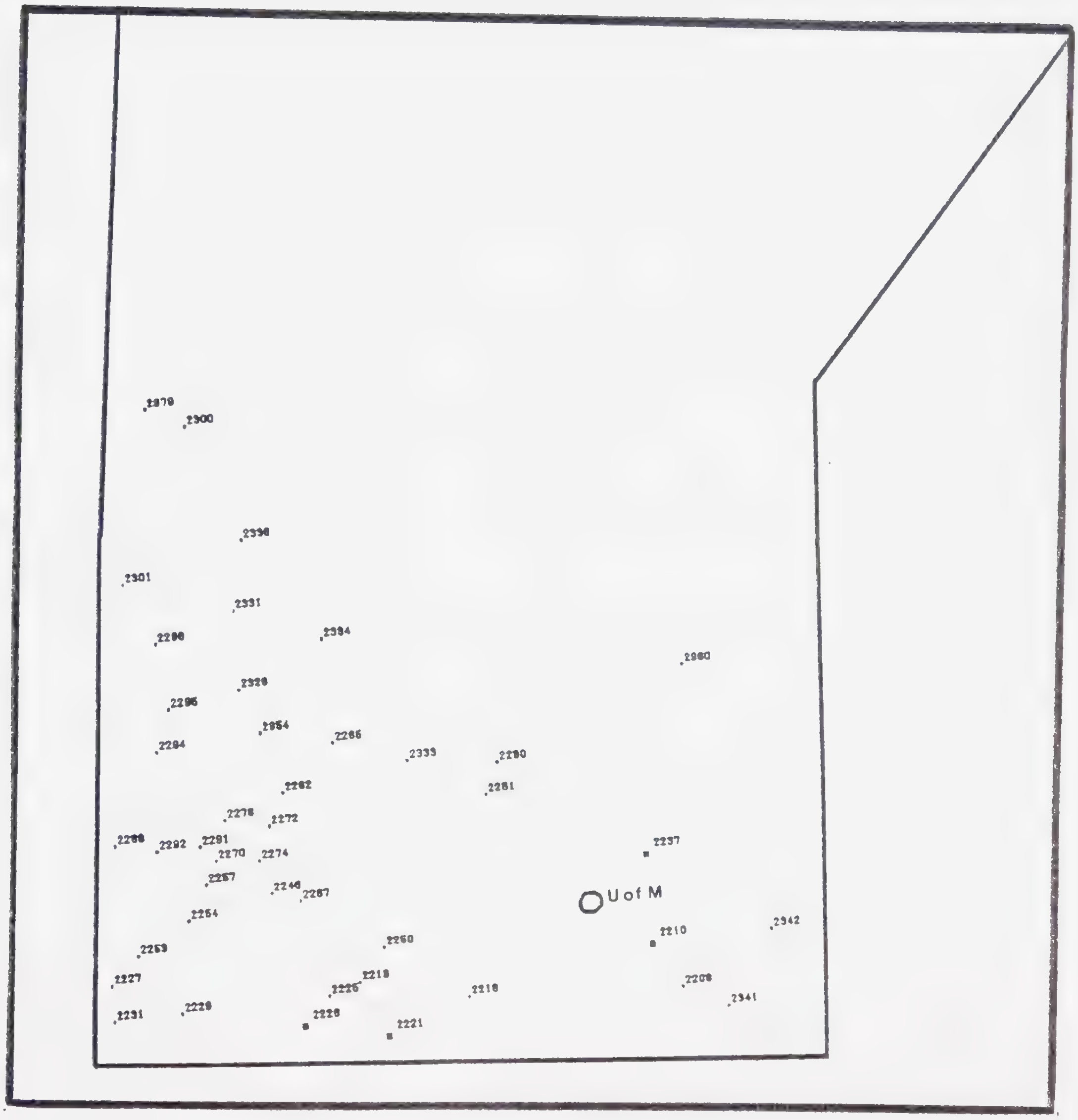

Figure 39 University of Manitoba No-Response CCS Areas
Prospective Students: • less than 300 ■ 300 to 1,500 ✱ over 1500

in no-response CCS areas. The more successful a university was considered to be, the fewer prospective students there were in no-response areas.

3. The third criterion included a consideration of the existing organizational technologies used by each of the universities to draw students. An "expected" enrollment was derived for each distance interval which was based on participation trends tabulated in Tables 10 and 11. Thus, in Table 20, the number of prospective students were "weighted" as outlined in Chapter 3, to provide a measure of what might be expected if the university's technologies associated with student recruitment remained the same. The right hand column in Table 21 illustrates the ranking of the nine universities using the weighted number of prospective students from the no-response CCS areas in the various distance intervals.

An examination of Table 19 revealed that there were three no-response CCS areas for the University of Calgary and the University of Alberta which had fewer than fifteen prospective students each. These were considered to be insignificant and thus ignored. Table 19 also identifies the closest distance interval for each university which contained a no-response CCS area. For Brandon University and the University of Regina, no-response areas occurred within one hour's drive of the university with 16 percent of the CCS areas as unresponsive for Brandon University and 42 percent for the University of Regina. For the University of Saskatchewan and the University of Manitoba, the first no-response CCS areas occurred in the 25 to 74 mile distance interval or between one hour and one-quarter of a day's drive from the university and

Table 19

NO-RESPONSE CCS AREAS BY DISTANCE FROM THE UNIVERSITY

| University | 0 to 24 miles | | | 25 to 74 miles | | | 75 - 149 miles | | | 150 - 349 miles | | | 350 or more | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | P | F | % | P | F | % | P | F | % | P | F | % | P | F | % | P |
| Victoria | | | | | | | | | | 5 | 19.2 | 5,595 | 5 | 19.2 | 2,802 | 10 | 15.4 | 8,379 |
| British Columbia | | | | | | | 1 | 9.1 | 1,530 | 5 | 15.6 | 3,585 | 2 | 18.2 | 670 | 8 | 12.5 | 5,785 |
| Lethbridge | | | | | | | 9 | 56.3 | 4,005 | 31 | 83.7 | 60,225 | 11 | 78.6 | 11,225 | 51 | 66.2 | 75,485 |
| Calgary | | | | 1 | 9.1 | 15 | 6 | 27.3 | 2,640 | 22 | 66.7 | 50,625 | 10 | 100.0 | 8,455 | 39 | 50.7 | 61,700 |
| Alberta | 1 | 20.0 | 10 | | | | 1 | 5.0 | 10 | 8 | 20.5 | 2,095 | | | | 10 | 13.0 | 2,115 |
| Saskatchewan | | | | 11 | 25.6 | 1,015 | 35 | 27.8 | 3,900 | 39 | 30.0 | 4,145 | | | | 85 | 27.4 | 9,060 |
| Regina | 1 | 16.7 | 240 | 16 | 36.4 | 2,119 | 74 | 57.4 | 12,020 | 109 | 82.6 | 20,044 | | | | 200 | 65.8 | 34,423 |
| Brandon | 3 | 42.4 | 940 | 15 | 36.6 | 2,720 | 33 | 64.7 | 8,580 | 14 | 73.7 | 2,910 | | | | 65 | 53.3 | 15,150 |
| Manitoba | | | | 8 | 25.0 | 1,805 | 18 | 41.9 | 3,005 | 17 | 51.5 | 2,035 | | | | 43 | 35.3 | 6,845 |

F = Number of no-response CCS areas
% = % of all CCS areas within the distance interval indentified as "unresponsive"
P = Number of prospective students contained in the no-response CCS areas
Total % = % of total CCS areas within the province identified as unresponsive

Table 20

*WEIGHTED AGGREGATE NUMBER OF PROSPECTIVE STUDENTS IN NO-RESPONSE CCS AREAS FOR EACH DISTANCE INTERVAL FROM THE UNIVERSITY

| University | 0 to 24 miles | | 25 to 74 miles | | 75 - 149 miles | | 150 - 349 miles | | 350 or more | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Full | Part | Full | Part | Full | Part | Full | Part | Full | Part | Full | Part | Both |
| Victoria | – | – | – | – | – | – | 10 | 1 | 1 | 0 | 11 | 1 | 12 |
| British Columbia | – | – | – | – | 1 | 1 | 14 | 4 | – | – | 15 | 5 | 20 |
| Lethbridge | – | – | – | – | 12 | 0 | 6 | 0 | – | – | 18 | 0 | 18 |
| Calgary | – | – | – | – | 4 | 0 | 10 | 0 | 1 | – | 15 | 0 | 15 |
| Alberta | – | – | – | – | – | – | 3 | 1 | – | – | 3 | 1 | 4 |
| Saskatchewan | – | – | 16 | 6 | 31 | 11 | 4 | 2 | – | – | 51 | 19 | 70 |
| Regina | 4 | 1 | 11 | 5 | 19 | 8 | 2 | 0 | – | – | 36 | 14 | 50 |
| Brandon | 8 | 4 | 13 | 4 | 3 | 2 | 0 | 0 | – | – | 24 | 10 | 34 |
| Manitoba | – | – | 10 | 8 | 7 | 5 | 2 | 0 | – | – | 19 | 14 | 33 |

*Prospective Students multipled by participation rate for each distance interval obtained from Table 10.

Table 21

UNIVERSITY RANKINGS USING THREE PARTICIPATION CRITERIA FOR NO-REPONSE CCS AREAS

| *Rank | No. 1 = % of CCS Areas Identified as as Unresponsive | No. 2 = Number of Prospective Students in No-Response CCS's | No. 3 = No. 2 Weighted by "Expected" Participation Rate |
|---|---|---|---|
| 1. | British Columbia | Alberta | Alberta |
| 2. | Alberta | British Columbia | Victoria |
| 3. | Victoria | Manitoba | Calgary |
| 4. | Saskatchewan | Victoria | Lethbridge |
| 5. | Manitoba | Saskatchewan | British Columbia |
| 6. | Calgary | Brandon | Manitoba |
| 7. | Brandon | Regina | Brandon |
| 8. | Regina | Calgary | Regina |
| 9. | Lethbridge | Lethbridge | Saskatchewan |

* Rankings from most successful to least successful.

involved approximately 25 percent of the total number of CCS areas at that distance. From the perspective of moving away from the university centre, the University of British Columbia, the University of Lethbridge, and the University of Calgary were free of no-response areas until the 75 to 149 mile interval, which in turn was equivalent to one-quarter to one-half a day's drive from the university. At that point the universities experienced a no-response area rate of 8 percent, 56 percent, and 27 percent, respectively. Finally, for the University of Victoria and the University of Alberta, there were no unresponsive CCS areas until the 150 to 349 mile interval or between one-half to one-day's drive from the universities where approximately 20 percent of the CCS areas were no-response areas. For universities in the provinces of Manitoba and Saskatchewan, no-response areas were not encountered beyond 350 miles largely because there were very few CCS areas beyond that distance.

Table 21 illustrates the outcome from the application of the three sets of criteria used to rank the nine universities. The disadvantage of using only the percentage of CCS areas identified as no-response CCS areas as a criterion was that some no-response CCS areas were more valuable than others in that they contained more prospective students; hence the application of the second criterion to rank universities. However, the difficulty inherent in applying the second criterion to rank universities was that based on past performance with participation from responsive areas, some universities could be expected to have a greater success rate at distances further from the university centre than other universities; therefore, the third criterion was applied. The third

criterion took into account the universities' existing recruitment technologies and expected success rates at various distances.

Consequently, the second criterion was an improvement over the first criterion, while the third criterion was an improvement over the second. However, the application of all three criteria was useful in that it permitted an assessment of the value of the no-response area to a particular university both in terms of the number of prospective students located in the area and in terms of the university's recruitment capabilities over distance from the institution.

An examination of Table 21 with the three sets of criteria for rating the universities which were most successful within the context of no-response areas associated with the university, revealed both similarities and differences between the three sets of rankings. The University of Alberta and the University of Victoria were close to the top of the ranking for all three criteria while the University of Regina and Brandon University were the least successful according to all three criteria. The weighted criterion had the most drastic effect on the University of Saskatchewan and the University of Calgary rankings in that the University of Saskatchewan dropped to last place after the weighted criterion was applied, while the University of Calgary was elevated to rank number three from rank number eight.

### Findings

The following is a summary of the findings or observations drawn from an analysis of the no-response CCS areas:

Observation no. 1. The University of Lethbridge and the University of Calgary ranked ninth and sixth with respect to the percentage of CCS

areas that were identified as no-response areas; the same universities ranked eighth and ninth respectively, when the numbers of prospective students in their no-response areas were used as the criterion for ranking; however, they ranked fourth and third respectively when the prospective student rankings were weighted according to what would be expected of the universities at each distance interval on the basis of participation trends at the same distance intervals.

Observation no. 2. The University of Saskatchewan ranked fourth and fifth when ranked by the percentage of no-response CCS areas and number of prospective students located in the no-response CCS areas; however, when ranked by the weighted criterion, the University of Saskatchewan ranking dropped to ninth place.

Observation no. 3. The University of Victoria, the University of Alberta, and the University of British Columbia were consistently ranked within the first three ranks with the application of the first two critera. After the third criterion involving weighting based on expected performance, the University of Alberta and the University of Victoria ranked first and second, respectively; however, the University of British Columbia changed from rank one and rank two to rank five.

Observation no. 4. The University of Regina and Brandon University remained within the sixth, seventh, and eighth ranks regardless of which of the three criteria was applied.

## INTERUNIVERSITY COMPETITION

To examine the nature of interuniversity competition within provinces, the CCS areas were identified which were shared by the

universities within the same province. The listing of the various shared CCS areas along with the participation rates attributable to each university within the same province, are provided in Appendix B. The CCS areas shared by two or more universities within a province were considered to be areas of competition for the purpose of analysis. The university receiving the most students from each shared CCS area was considered to dominate the CCS area and thus the competition for students in the area, in spite of the influence exerted by other competing universities receiving students from the same shared CCS. Thus, the analysis included an examination of the geographical array of shared CCS areas and the patterns of dominance exhibited by the competing universities within each province.

In addition, the competitive influence of universities in adjacent provinces was investigated by examining the interprovincial migration of students between adjacent provinces. Appendix C contains a listing of the origins of students leaving a province to attend university in one of the adjacent provinces. The table in Appendix C also contains the participation rate at each university in the adjacent provinces for a particular CCS area as a point of origination for students leaving the province.

### Dominant Universities

Figures 40 to 47 inclusive are maps of the shared CCS areas or areas of competition for each of the four western provinces. Each province is represented by two maps, one for those CCS areas shared on the basis of full-time enrollment and one map for those CCS areas shared on the basis of part-time enrollment. The maps for each province were

examined to determine which CCS's were dominated by which universities and the geography of the dominated area for each university.

The procedure for reading the maps in Figures 40 to 47 was as follows:

1. The locations of the university centres in the province were plotted.

2. The locations of the CCS areas shared by two or more universities within the province which were considered to be areas of interuniversity competition and located on the map immediately to the left of each four digit number were noted. The four digit number represented the CCS area code used by Statistics Canada in the 1976 Census. For each shared CCS area or area of competition thus coded, specific communities associated with the area could be identified through the 1976 Census coding. Appendix B contains each shared CCS code thus mapped, along with the participation rates from the area for each of the universities within the province.

3. For each map, a continuous line has been used to enclose a university centre and a set of shared CCS areas. The set of shared CCS areas thus contained in the enclosure were those areas of competition dominated by the university also enclosed in the same area. Those shared CCS areas not enclosed, were dominated by the university on the map not located in the enclosure.

4. CCS areas coded with an asterisk were CCS areas equally shared and where no single university dominated.

5. The shared CCS areas were considered to be areas of competition between universities within the province while the set of CCS areas

identified as being dominated by a single university were referred to as the area dominated by the university.

The findings will be discussed below, province by province.

British Columbia. In an examination of Figure 40 and Figure 41, it is evident that the area dominated by the University of British Columbia contained more CCS's than the area dominated by the University of Victoria, the latter which is enclosed on the map with a continuous line. The University of British Columbia dominated twenty-four or 53.3 percent of the forty-five CCS areas involving full-time students while the University of Victoria dominated sixteen of the areas or 35.5 percent. For part-time enrollment, the University of British Columbia dominated twenty-six or 53.8 percent of the shared CCS areas, while the University of Victoria only dominated eight or 30 percent.

Although there were fewer areas of competition for part-time students than for full-time students, the areas of competition for both full- and part-time students appear to have been well-distributed geographically across the province. Figure 40 illustrates that the University of Victoria's dominant area was not restricted to Vancouver Island for full-time student enrollment, but reached well into the interior of British Columbia to the British Columbia-Alberta border and well into the northern part of the province. As for the part-time student, the University of Victoria dominated all of Vancouver Island and a single CCS area close to the British Columbia-Alberta border. The data were restricted to the University of British Columbia and the University of Victoria and unavailable for Simon Fraser University, located in Burnaby, which would be expected to have had an impact on the competition for new students in the area.

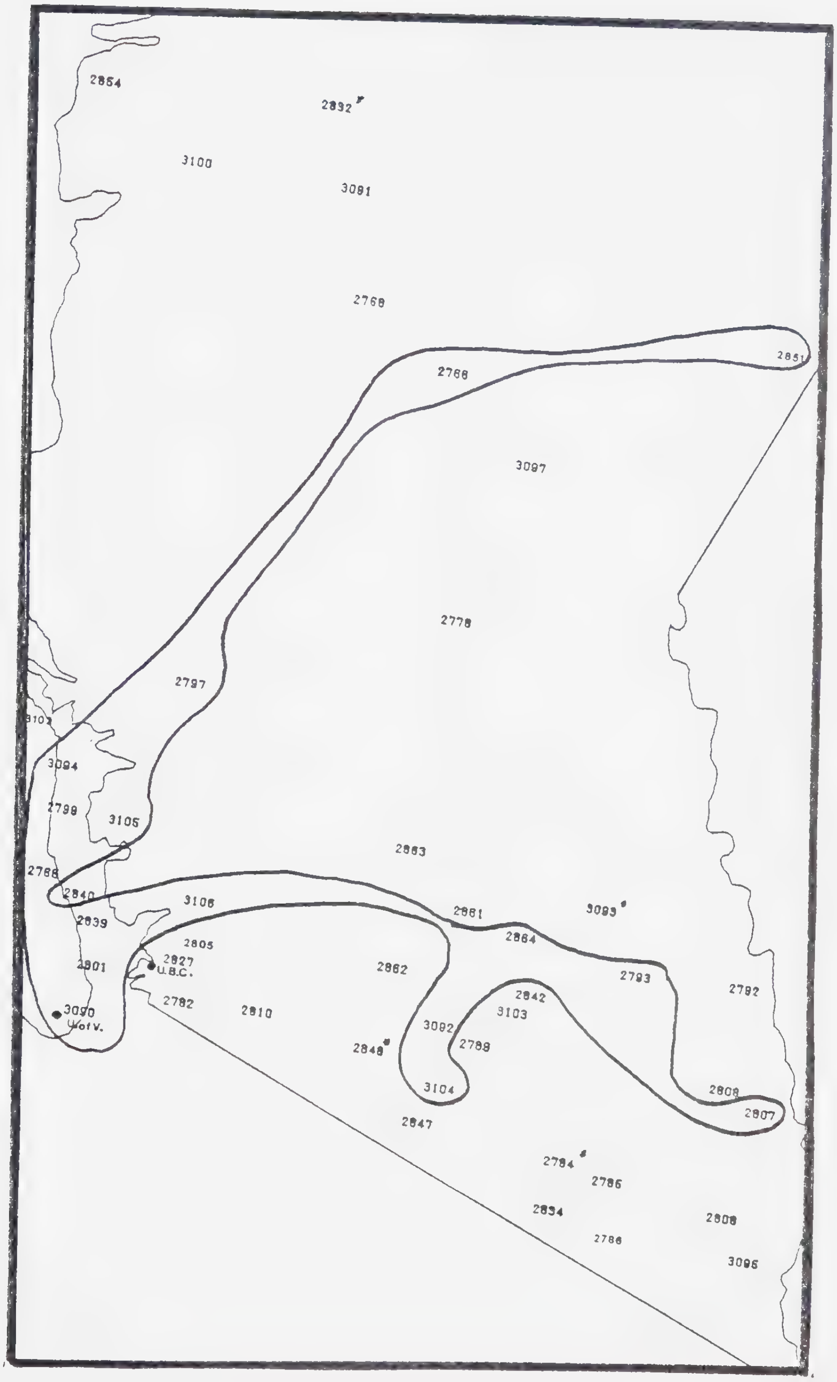

Figure 40 British Columbia Full-Time Dominated Areas

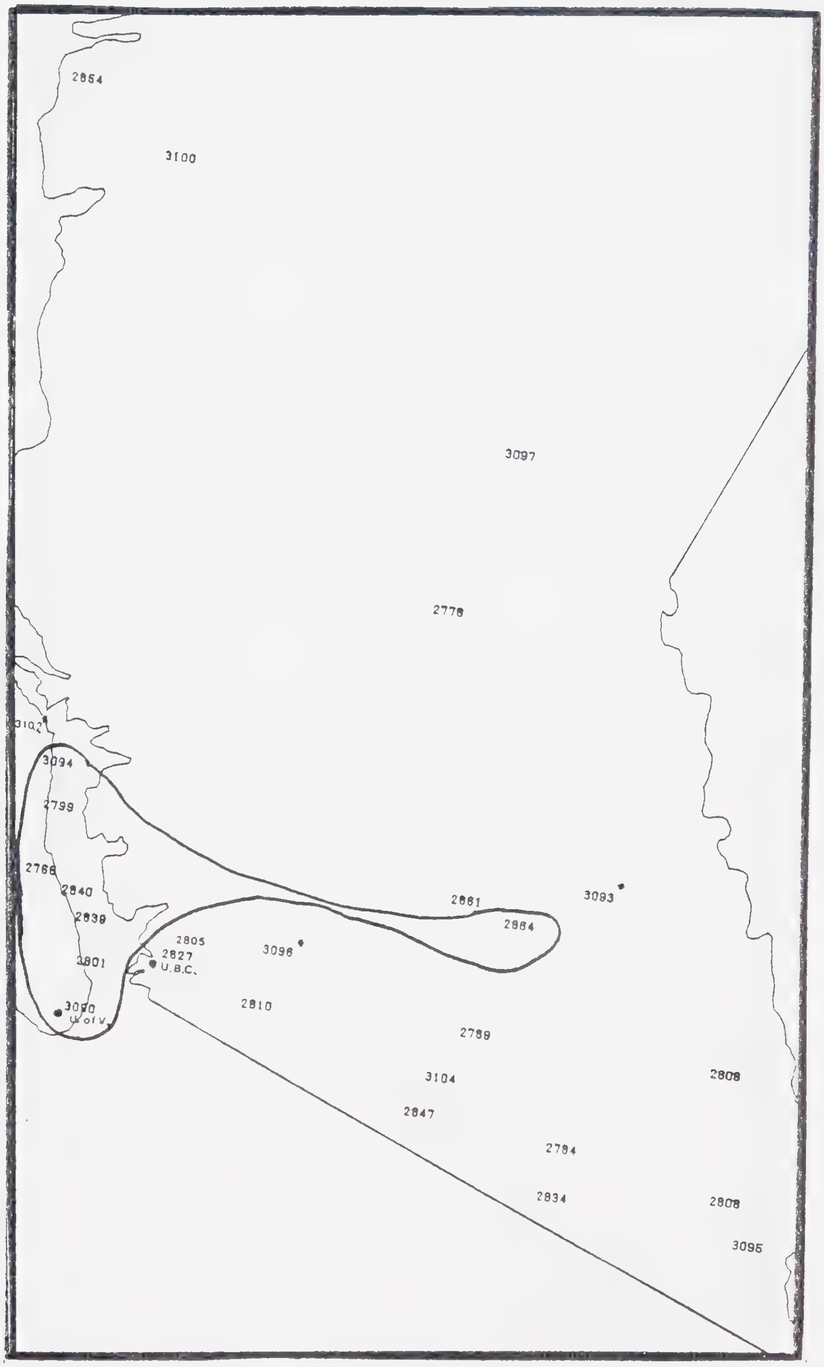

Figure 41 British Columbia Part-Time Dominated Areas

Alberta. Figures 42 and 43 illustrate the competition for students in Alberta between the University of Lethbridge, the University of Calgary, and the University of Alberta. CCS areas shared by two or more of the three universities for full-time students represented approximately one-half of the total number of CCS areas in Alberta. As is evident from Figure 43, relatively few areas of competition existed for part-time students in Alberta.

Perhaps the most obvious feature of the two maps illustrating competition in the province of Alberta is that competition existed throughout the province; however, the dominated areas for the three universities were well-defined around each university centre for both part- and full-time students. The University of Alberta, with twenty CCS areas representing 51.2 percent of the total number of shared CCS's with full-time enrollment, clearly dominated the competition for full-time students; however, the University of Alberta's dominated area was, with the exception of two CCS's, closely confined to the northern half of the province. The University of Calgary dominated ten or 25.1 percent of the shared CCS areas with its dominant area restricted to central Alberta, while the University of Lethbridge dominated only eight of the shared CCS areas or 22 percent and was confined to southern Alberta. The part-time areas dominated were similarly confined to the immediate vicinity of the dominating university with, however, the University of Lethbridge and the University of Alberta dominating most of the shared CCS areas.

Saskatchewan. Figure 44 and Figure 45 illustrate the dominant areas for the University of Saskatchewan and the University of Regina in their

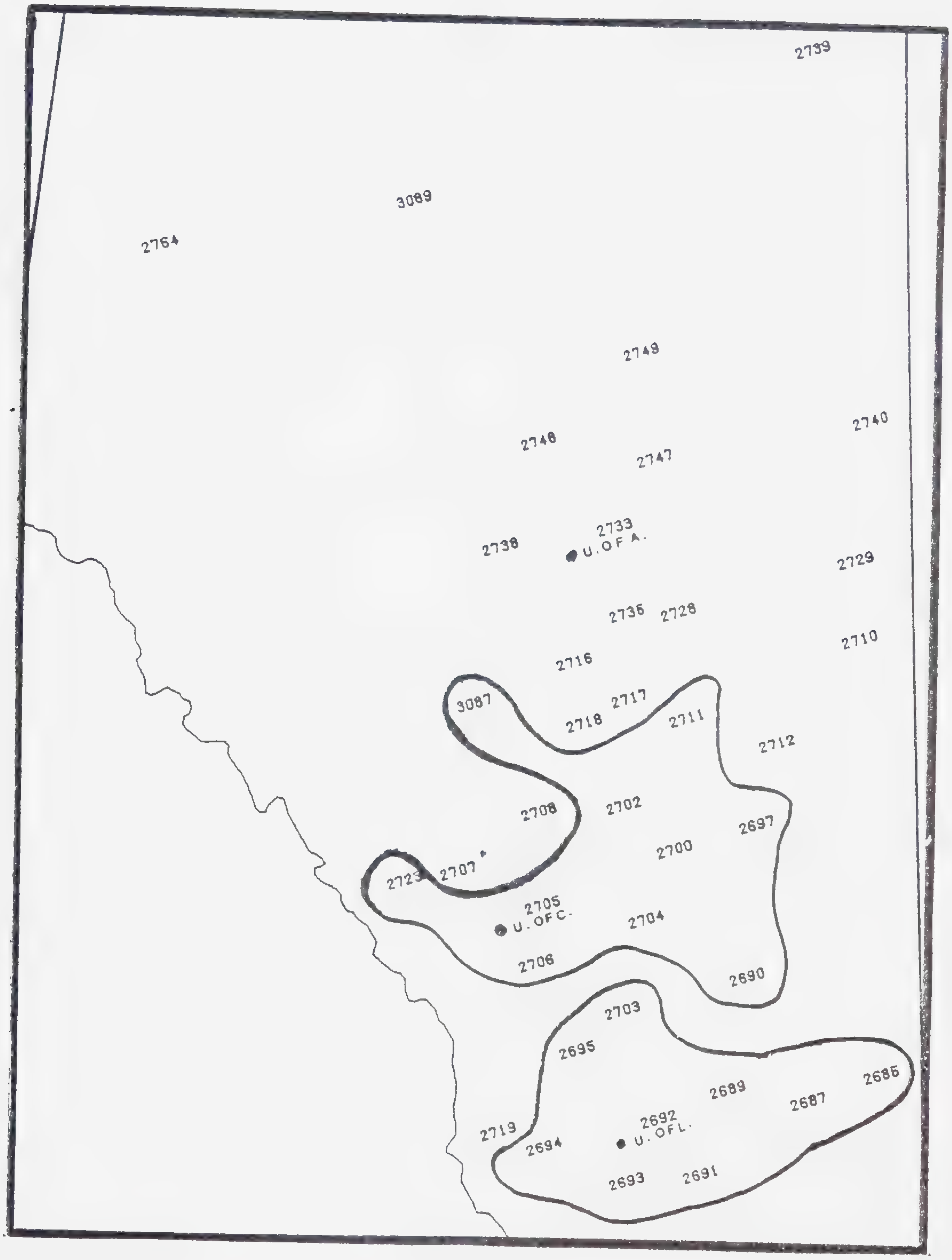

Figure 42 Alberta Full-Time Dominated Areas

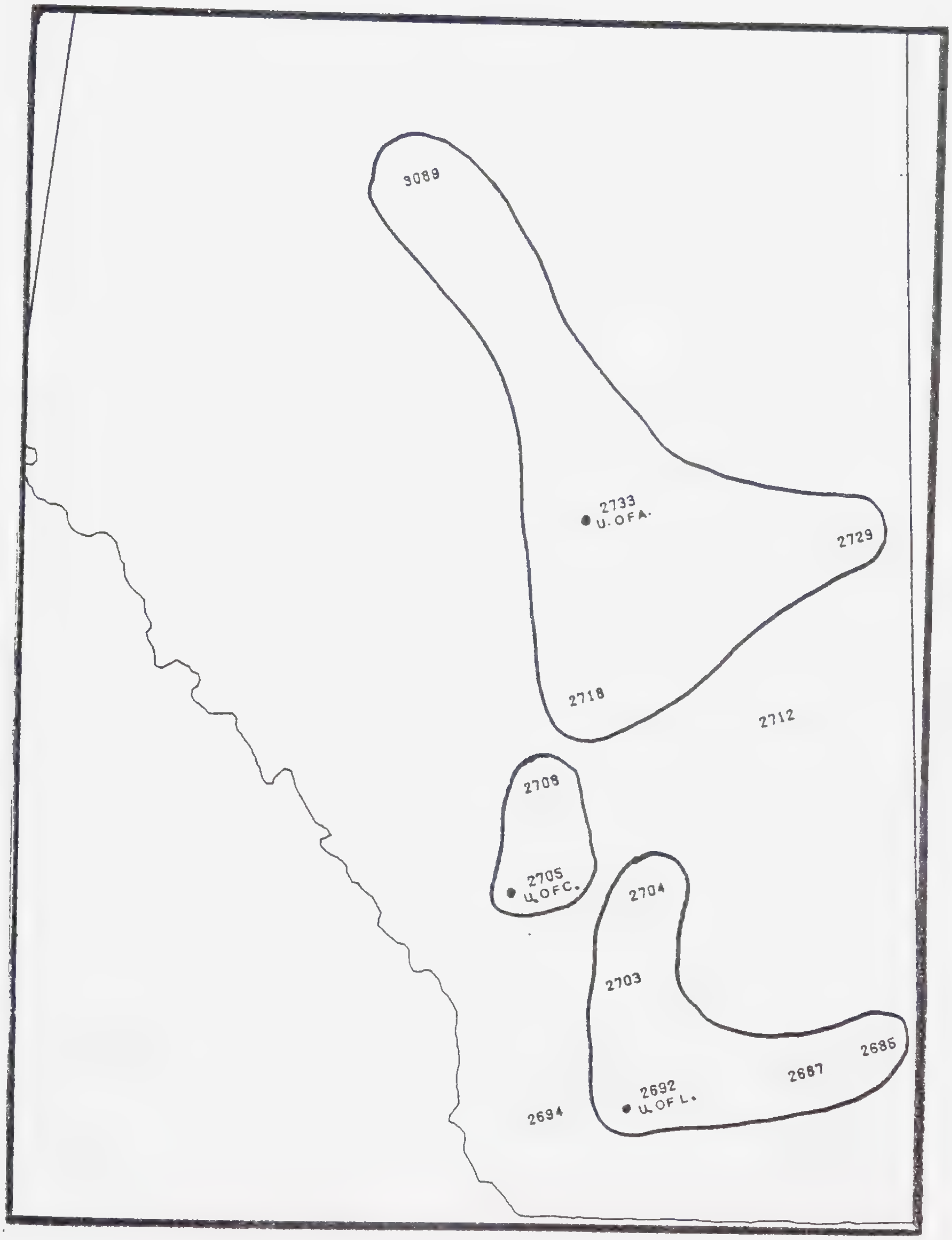

Figure 43 Alberta Part-Time Dominated Areas

competition for full- and part-time students. The University of Saskatchewan clearly dominated the full-time shared CCS areas in Saskatchewan with thirty-one or 57 percent of the areas of full-time competition within its dominant area, leaving the University of Regina with thirteen or 24 percent. However, the competition for part-time students was much more equitable with each university dominating five or 26 percent of the shared CCS areas involving part-time students.

The University of Regina dominated area was restricted to the southeast corner of the province for both full- and part-time enrollments even though for the full-time student the areas of competition extended northward beyond the University of Saskatchewan. For the University of Saskatchewan, the dominated area extended southward and completely surrounded the area dominated by the University of Regina.

Figure 45 demonstrates the little influence the University of Regina had on the part-time students and the overwhelming dominance of the University of Saskatchewan with respect to part-time students in Saskatchewan. Figure 45 illustrates few areas of competition located between the University of Regina and the University of Saskatchewan with no areas of competition north of the University of Saskatchewan, even though many CCS areas existed in both locations.

Manitoba. Figures 46 and 47 illustrate the areas of competition between the University of Manitoba and Brandon University. It might be assumed that the University of Winnipeg was also in competition for students from many of the same CCS areas as well as additional areas, and had the University of Winnipeg been included in the study, Figures 46 and 47 would look somewhat different.

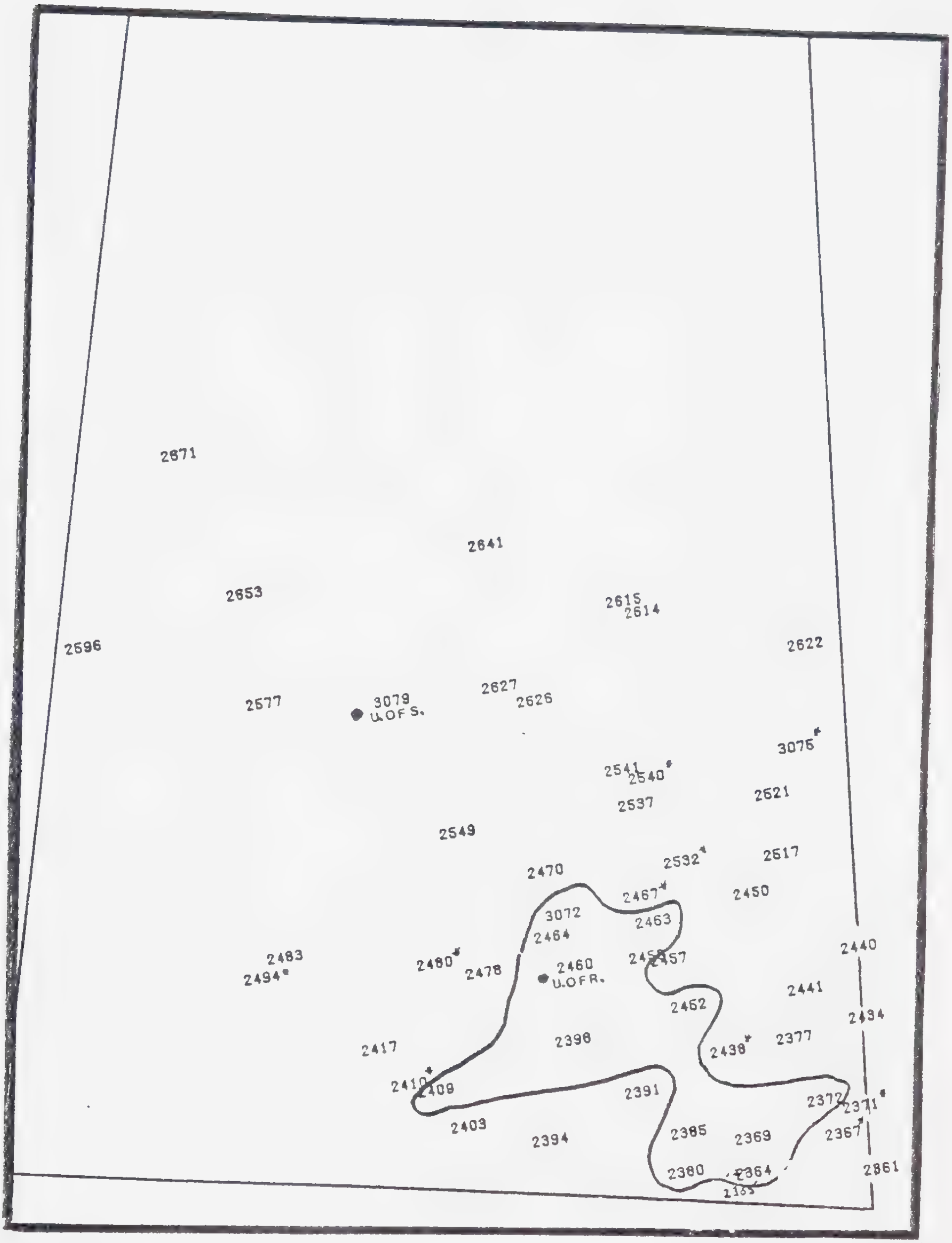

Figure 44 Saskatchewan Full-Time Dominated Areas

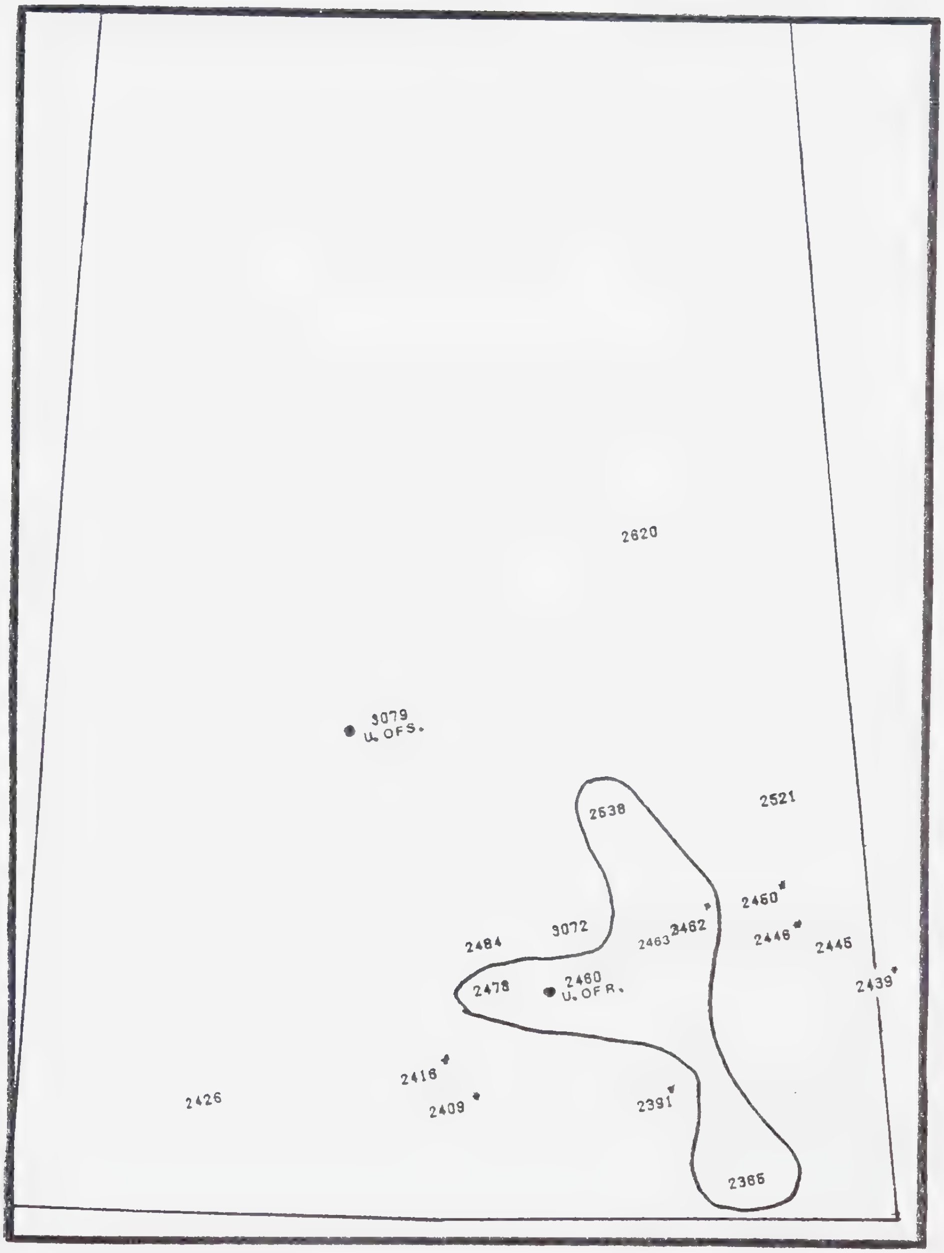

Figure 45 Saskatchewan Part-Time Dominated Areas

In Figure 46, the map illustrates competition for full-time students which was distributed fairly evenly around the southern populated area of the province and on both sides of both universities involved in the study. In Figure 47, the competition for part-time students did not exist in the southwestern corner of the province nor in the opposite southeastern corner of the province. However, extensive competition existed within the CCS areas located geographically between the two universities as well as within the CCS areas located north of the universities.

In the competition for full-time students, the University of Manitoba dominated seventeen or 51.5 percent of the shared CCS areas while Brandon University dominated ten or 30.3 percent of the shared CCS's or areas of competition. Figure 46 illustrates the dominated area for Brandon University with the University of Manitoba dominated area surrounding it and very close to Brandon University itself. However, Brandon University was able to dominate a number of shared CCS's located between the two universities and one area (CCS number 2258) immediately north of the University of Manitoba. For the part-time student, the University of Manitoba was also the dominant university, with twelve or 54.5 percent of the shared CCS areas within its dominated area, while 22.7 percent of the shared CCS's were located within the Brandon University area. Figure 47 also illustrates the very confined nature of the Brandon University area; however, the area that Brandon University did dominate included over one-half of the shared CCS's located geographically between the University of Manitoba and Brandon University.

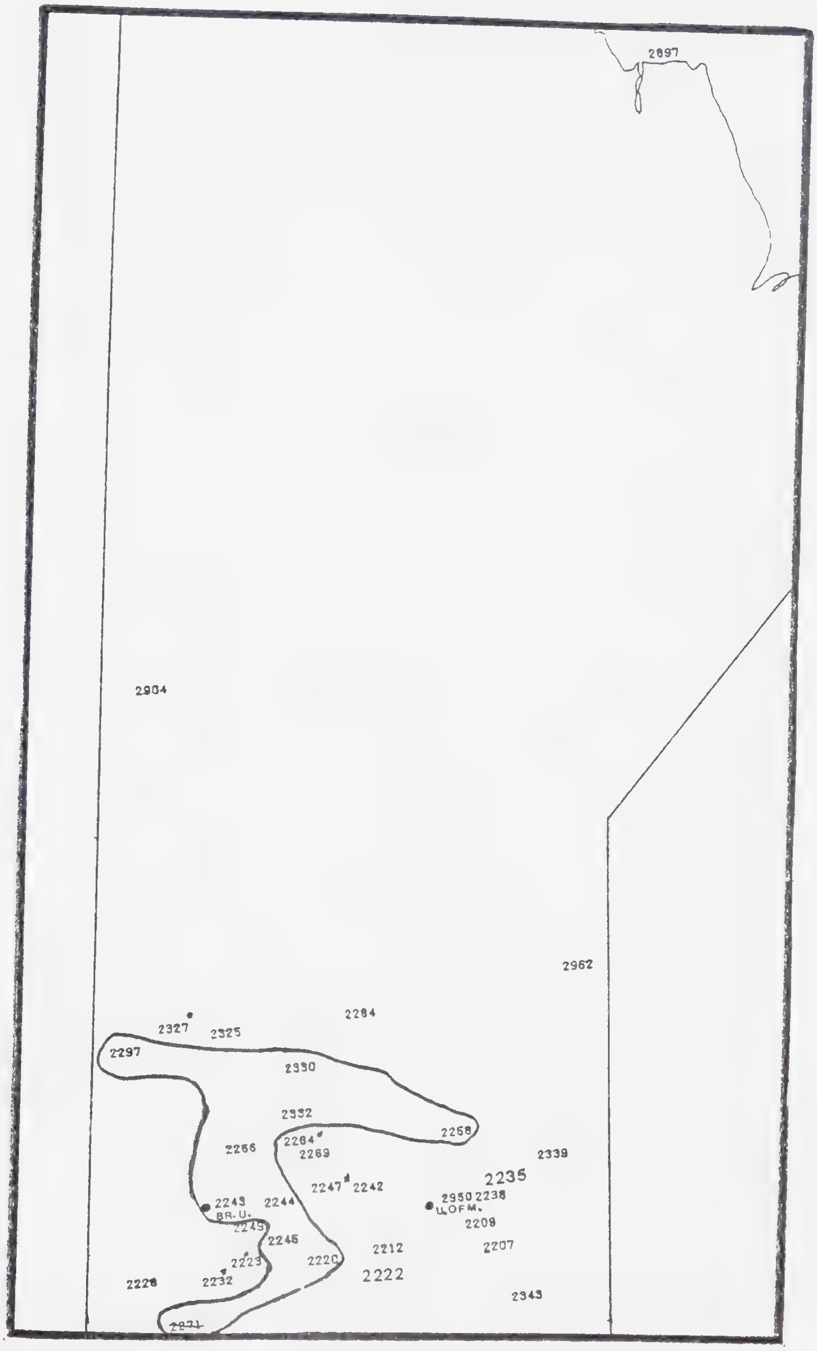

Figure 46 Manitoba Full-Time Dominated Areas

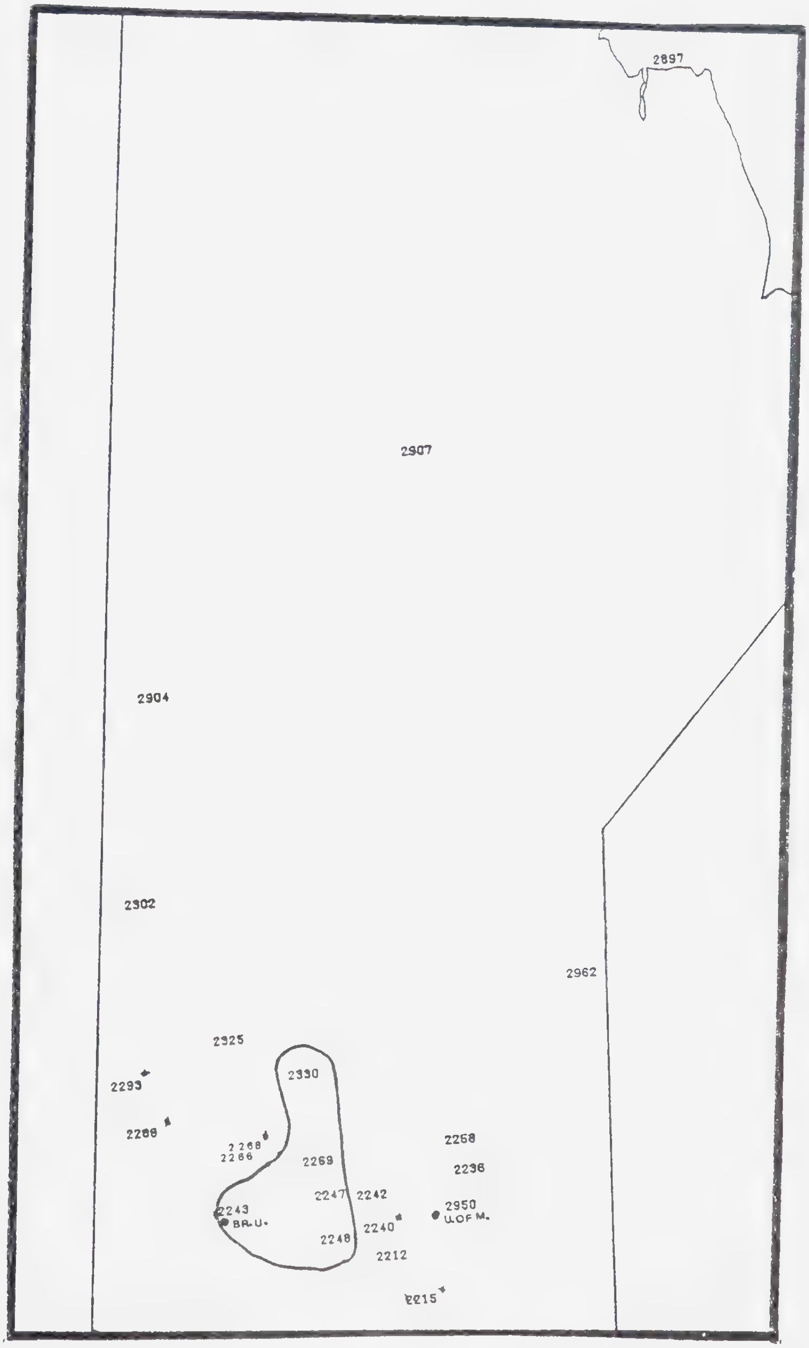

Figure 47 Manitoba Part-Time Dominated Areas

## Participation in Dominated Areas Within the Provinces

Table 22 summarizes the data for within province competition for university undergraduates. In addition to examining the proportion of CCS areas dominated by a university and their respective locations, data were assembled in Table 22 to permit an assessment of the potential of the CCS areas thus dominated and the success of the dominating university. Thus the numbers of prospective students for shared CCS areas were assessed to determine the potential of the areas dominated by each university. In addition, enrollments for the dominated areas were tabulated and the participation rates calculated for the overall dominated area to determine how successful the dominating university was.

Table 22 revealed that, in British Columbia, the University of British Columbia dominated the greatest percentage of areas where competition existed, and those areas involved a prospective student body three times the size of the prospective student body in the University of Victoria dominated area. However, the participation rate for the University of British Columbia was substantially less than the University of Victoria participation rate for areas of competition from which both full- and part-time students originated. For all nine universities, the participation rates for full-time students from areas dominated by a particular university were greater than the participation rates of part-time students from similar areas.

In Alberta, the participation rates for dominated full-time CCS areas were about the same for all three universities. However, for CCS areas with competition for part-time students, the University of Alberta dominated the most areas and had the highest participation rate while the University of Calgary had the lowest participation rate.

Table 22

WITHIN-PROVINCE COMPETITION FOR UNIVERSITY UNDERGRADUATES

| | Number of CCS's Shared | | | Number of CCS's Dominated | | Prospective Students Involved | | Enrollment Involved | | Dominated CCS Participation Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Province | Full | Part | University | Full | Part | Full | Part | Full | Part | Full(%) | Part (%) |
| British Columbia | 45 | 26 | Victoria | 16 | 8 | 112,760 | 91,125 | 1,049 | 343 | 0.93 | 0.38 |
| | | | British Columbia | 24 | 14 | 399,110 | 359,215 | 2,676 | 684 | 0.67 | 0.19 |
| Alberta | 39 | 13 | Lethbridge | 8 | 5 | 24,030 | 23,670 | 273 | 73 | 1.136 | 0.308 |
| | | | Calgary | 10 | 2 | 126,260 | 112,140 | 1,331 | 254 | 1.050 | 0.227 |
| | | | Alberta | 20 | 4 | 166,340 | 120,745 | 1,860 | 409 | 1.118 | 0.339 |
| Saskatchewan | 54 | 19 | Saskatchewan | 31 | 5 | 58,910 | 31,725 | 1,051 | 271 | 1.780 | 0.854 |
| | | | Regina | 13 | 5 | 32,185 | 37,345 | 592 | 150 | 1.839 | 0.402 |
| Manitoba | 33 | 22 | Brandon | 10 | 5 | 11,955 | 8,280 | 99 | 43 | 0.83 | 0.52 |
| | | | Manitoba | 17 | 12 | 113,850 | 119,370 | 1,142 | 725 | 1.00 | 0.61 |

In Saskatchewan, the University of Saskatchewan dominated more CCS areas involving full-time students, but had a slightly lower participation rate in those areas than did the University of Regina in similar areas. In areas of competition for part-time students, the University of Saskatchewan and the University of Regina dominated five CCS areas each with the University of Regina areas involving more prospective students; however, the University of Saskatchewan participation rate for those areas thus dominated, was approximately twice as high as the participation rate for the University of Regina.

In Manitoba, for both part- and full-time students, the University of Manitoba experienced higher participation in the area it dominated than Brandon University did in the area it dominated

## Participation Rates for Universities in Adjacent Provinces

The final dimension in the investigation of interuniversity competition for students was the examination of the competition for students among universities in adjacent provinces. Thus each province was examined to determine at which universities students registered when they left the province to attend a university in an adjacent province. The data for each CCS area with students leaving the province is located in Appendix C. Figures 48 and 49 are maps of western Canada which identify the CCS areas as the origins of students leaving the province. The maps in Figures 48 and 49 were not restricted to shared CCS areas, but display all areas which sent new enrollees to a university in an adjacent province. However, when more than one university was involved for a CCS area, it was identified as being dominated by the university receiving the most students. Each CCS area is identified by the university in which the student or students enrolled.

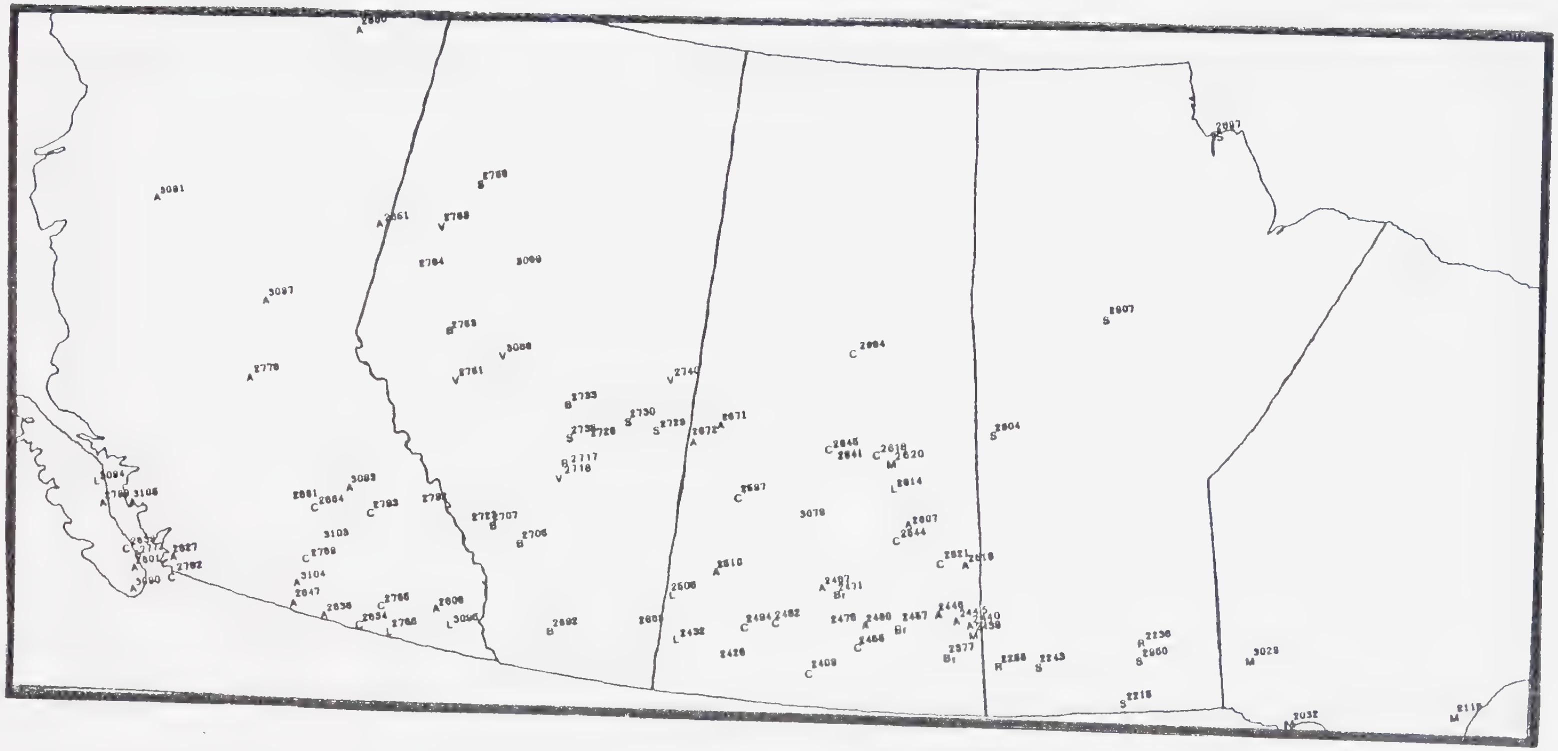

Figure 48 Full-Time CCS Areas Shared by Universities in Adjacent Provinces

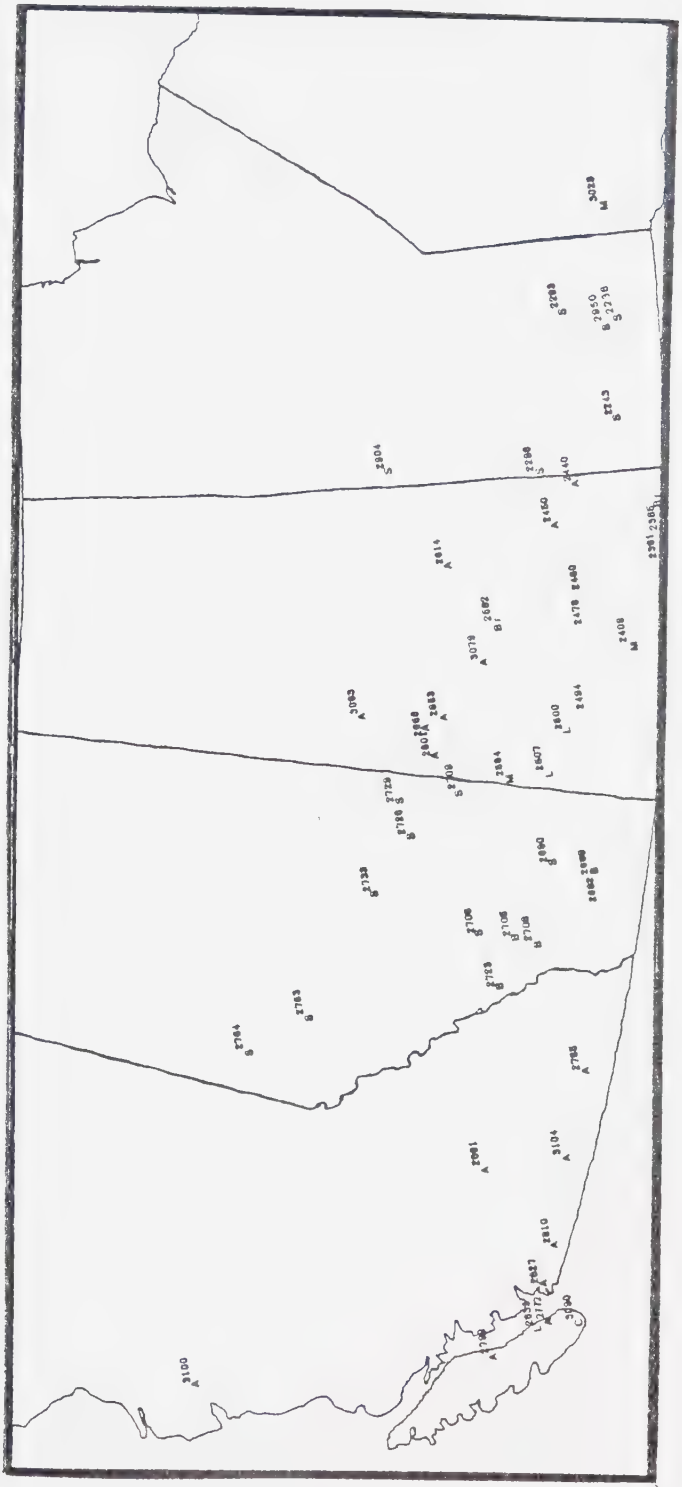

Figure 49 Part-Time CCS Areas Shared by Universities in Adjacent Provinces

Table 23 summarizes the influence of the universities as they competed for students from adjacent provinces. In British Columbia, the University of Alberta dominated fifteen of the twenty-nine CCS areas with full-time students leaving the province and eight out of eleven CCS areas with part-time students leaving the province. However, the University of Alberta had the lowest participation of the three universities for both part- and full-time students. The University of Lethbridge dominated the fewest areas but had the highest participation rate in those dominated of the three universities in Alberta.

For Alberta full-time students, the University of Victoria and the University of British Columbia each dominated five CCS areas; however, while the participation rates were nearly the same for the two universities, the University of British Columbia dominated CCS areas with the greatest potential and was therefore the most successful by registering forty Alberta full-time students, in comparison to six students at the University of Victoria. With respect to part-time students from the Province of Alberta, the University of Saskatchewan dominated the most CCS areas with the greatest potential and enrolled the most students from Alberta. Therefore, although the University of Saskatchewan and the University of British Columbia participation rates were approximately the same, the University of Saskatchewan was considered to be the most successful with respect to Alberta part-time students.

For Saskatchewan, of the five universities in Alberta and Manitoba, the University of Calgary and the University of Alberta dominated the most Saskatchewan CCS areas with respect to the full-time students, with

Table 23

ADJACENT-PROVINCE COMPETITION FOR UNIVERSITY UNDERGRADUATES

| Province of Origin | Number of CCS's Involved | | Universities In Adjacent Province(s) | Number of CCS's Dominated | | Prospective Students Involved | | Enrollment Involved | | Dominated CCS Participation Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Full | Part | | Full | Part | Full | Part | Full | Part | Full(%) | Part (%) |
| British Columbia | 29 | 11 | Lethbridge | 3 | 2 | 9,315 | 21,650 | 13 | 2 | .140 | .009 |
| | | | Calgary | 8 | 0 | 53,520 | 0 | 21 | 0 | .040 | 0.000 |
| | | | Alberta | 15 | 8 | 344,540 | 295,345 | 64 | 13 | .019 | .004 |
| Alberta | 20 | 13 | Victoria | 5 | 0 | 18,310 | 0 | 6 | 0 | .033 | 0.000 |
| | | | British Columbia | 5 | 5 | 231,255 | 117,640 | 40 | 15 | .034 | .013 |
| | | | Saskatchewan | 4 | 7 | 7,615 | 119,480 | 11 | 17 | .009 | .014 |
| | | | Regina | 1 | 0 | 2,705 | 0 | 1 | 0 | .037 | 0.000 |
| Saskatchewan | 35 | 18 | Lethbridge | 3 | 2 | 965 | 535 | 3 | 2 | .310 | .373 |
| | | | Calgary | 11 | 0 | 6,645 | 0 | 13 | 0 | .195 | 0.000 |
| | | | Alberta | 11 | 8 | 32,575 | 32,525 | 25 | 17 | .077 | .052 |
| | | | Brandon | 3 | 2 | 745 | 1,960 | 3 | 2 | .403 | .102 |
| | | | Manitoba | 2 | 2 | 1,010 | 735 | 2 | 3 | .198 | .408 |
| Manitoba | 8 | 6 | Saskatchewan | 6 | 6 | 115,190 | 111,060 | 15 | 7 | .013 | .006 |
| | | | Regina | 2 | 0 | 3,440 | 0 | 2 | 0 | .058 | 0.000 |

eleven CCS areas dominated by each university. However, the smaller universities in Lethbridge and Brandon enrolled their students from Saskatchewan CCS areas with fewer potential students; hence, the University of Lethbridge and Brandon University had the highest full-time participation rates. The University of Alberta dominated by far the most Saskatchean CCS areas for part-time students; however, because the CCS areas thus dominated were heavily populated areas, the University of Alberta participation rate for part-time students from Saskatchewan was considerably smaller than the part-time participation rates of the University of Lethbridge and Brandon University.

For Manitoba, the only adjacent province considered was the province of Saskatchewan, with the University of Regina and the University of Saskatchewan competing for Manitoba students. The University of Saskatchewan dominated both full- and part-time students. However, the few Manitoba CCS areas dominated by the University of Regina contained a relatively small number of prospective students with the result that the University of Regina exhibited a higher participation rate for full-time students from Manitoba than did the University of Saskatchewan.

### Potential Versus Participation Rate in Dominated Areas

Because of the apparent inverse relationship between the potential for a dominated area measured by the number of prospective students, and the participation rate for the area at the dominant university, a set of Pearson correlations were calculated for within province competition and for competition between universities in adjacent provinces. Table 24 displays the correlations with a mean of the correlations of -0.55

Table 24

PEARSON CORRELATIONS FOR THE MEAN NUMBER OF PROSPECTIVE STUDENTS PER CCS AREA DOMINATED AND THE PARTICIPATION RATE FOR THE AREA

| | | Participation Rate for the Dominated Area | |
|---|---|---|---|
| | | Full-time | Part-time |
| Mean Number of Prospective Students per CCS Area | Competition Between Universities Within Provinces | $r = -0.57$<br>(df = 7 $p < 0.11$) | $r = -0.55$<br>(df = 7 $p < 0.15$) |
| | Competition from Universities in Adjacent Provinces | $r = -0.50$<br>(df = 12 $p < 0.07$) | $r = -0.58$<br>(df - 7 $p < 0.1$) |
| | Mean of the Correlations | $r = -0.55$ | |

between the mean number of prospective students per CCS area dominated and the participation rate for the area. Table 24 illustrates that with seven and twelve degrees of freedom, the four correlations thus calculated have a .07 to .15 percent probability of occurring by chance.

Findings

The findings which are related to the analysis of interuniversity competition were as follows:

Observation no. 1. There were three distinct geographic patterns created when areas involving competition were mapped with the dominating universities identified.

One pattern occurred in Alberta (Figures 42 and 43) for both full- and part-time shared CCS areas. The defining attribute of the pattern was that the areas of competition, or the shared CCS areas, clustered to form dominated areas which were well-defined around the dominating universities and easily discriminated, with the respective areas dominated by the three universities in Alberta separated and somewhat isolated; therefore, the pattern will be referred to in future references as geographic isolation.

A second pattern occurred with respect to the shared CCS areas for full-time students in British Columbia and Manitoba (Figures 40 and 46). The key attribute identifying the pattern was a dominated area of which a small proportion was located well within the boundary of the area dominated by a competing university. The pattern reflected a "sprawling" of one dominated area over another. For example, in British Columbia the University of Victoria dominated area tended to "sprawl" over the area

dominated by the University of British Columbia. Therefore, for future reference, the second pattern will be referred to as geographic sprawl.

The third pattern occurred most frequently and was identified in a province when the dominated area of one university was more or less surrounded by the dominated area of a competing university to make it appear that it was being contained geographically by the competing university; thus, the pattern was labelled geographic containment. Geographic containment was apparent in the competition patterns for part-time students in Manitoba (Figure 47), British Columbia (Figure 41), and Saskatchewan (Figure 45). For competition involving full-time students, geographic containment was evident in Saskatchewan (Figure 44).

Observation no. 2. When there was competition between universities within a province and when there was competition between universities in adjacent provinces for students willing to leave the province:

a) the participation rate for full-time students from a set of shared CCS areas dominated by a university was greater than the participation rate for part-time students under similar circumstances;

b) there tended to be a negative correlation in areas dominated by a university between the mean number of prospective students per CCS area and the participation rate for the area in the dominant university.

Observation no. 3. When there was competition for full-time students between universities within a province, the dominant universities with the largest areas and the most shared CCS's were: the University of British Columbia, the University of Alberta, the University

of Saskatchewan and the University of Manitoba. The dominant universities for part-time students were the University of British Columbia, the University of Lethbridge, the University of Manitoba. In Saskatchewan both universities dominated five CCS areas each; however, the University of Regina's dominated area involved a slightly larger number of prospective students than did the University of Saskatchewan's area.

Observation no. 4. When there was competition between universities in adjacent provinces for students willing to leave the province, the universities which dominated both full-time and part-time areas of competition were: the University of British Columbia, the University of Alberta, the University of Saskatchewan, and the University of Manitoba.

## SUMMARY OF FINDINGS

Key findings related to student participation and geographic orientation are summarized below.

1. The number of CCS areas involved and their respective participation rates for full-time enrollment were consistently higher than those for part-time enrollment.

2. Participation rates and their rates of decline over distance, varied from university to university.

3. CCS areas within which universities were located had very low participation rates at other universities regardless of their proximity to the other universities and whether or not they were located within the same province as the other universities.

4. The participation rate for CCS areas in provinces adjacent to the province of the receiving university were considerably less than participation rates for CCS areas within the same province.

5. The catchment areas of universities in Alberta tended to be complementary, in a geographical context, between universities but tended not to be complementary at the part-/full-time level within a university, whereas for the other three provinces the reverse appeared to be true.

6. For the University of Regina, the University of Lethbridge and Brandon University, participation over distance tended to be less for both full- and part-time students than for other universities--with the exception of the University of Regina first distance interval for full-time enrollment.

7. Correlations between full- and part-time participation had a mean of +0.96 for equal distance intervals from the university; however, the mean of the correlations between full- and part-time students for individual CCS areas was +0.39.

8. The gravity model tended to over-predict for the University of Lethbridge, the University of Calgary, the University of Regina and Brandon University, while it tended to under-predict for the remaining institutions with the exception of the University of Victoria and the University of Manitoba for which the model both over- and under-predicted depending on the distance interval being considered.

9. Examination of the no-response CCS areas demonstrated that the University of Calgary and the University of Lethbridge had no-response CCS areas containing more potential students than any other university--particularly at the 150 to 349 mile interval; however, given expectations

for the two universities derived from enrollment trends over distance, neither university was expected to perform differently.

10. The number of University of Saskatchewan potential students located within no-response CCS areas, particularly in the 75 to 149 distance interval, was greater than would have been expected for the university given its enrollment trends over distance for responsive CCS areas.

11. The University of Victoria and the University of British Columbia potential students in no-response CCS areas were about what would have been expected of the universities given their enrollment trends over distance for responsive areas.

12. There were three distinct geographic patterns created when areas involving competition were mapped with the dominating universities identified. They were labelled: _geographic isolation_, _geographic sprawl_, and _geographic containment_.

13. Where there was competition between universities:

a) there tended to be a moderate negative correlation in the dominated area between the mean number of prospective students per CCS area and participation at the dominant university;

b) the four larger universities tended to dominate the competition for full-time students between universities within the same province; and,

c) the four larger universities tended to dominate the competition for both full-time students and part-time students between universities in adjacent provinces.

# CHAPTER 5

# FINDINGS: PARTICIPATION RATE PREDICTORS

The purpose of this chapter is to report findings of the study related to the relative success with which distance and five other home area characteristics predict the full-time and part-time participation of new students from the area for each university. As discussed in Chapter 3, the investigation of the predictive power of the six home area measures selected for this study was confined to those CCS or home areas from which one or more students enrolled at the university under study. The CCS or home area measures investigated were as follows:

1. the straight-line distance between the CCS area from which the students originated and the university at which they enrolled;
2. the average family income in the CCS or home area;
3. the average family size of families in the area with one or more children at home;
4. the percentage of prospective students under the age of twenty-five in the CCS or home area;
5. the percentage of unemployed prospective students in the CCS or home area; and,
6. the percentage of the total population over the age of fifteen and having attended university prior to the period under study.

As discussed in Chapter 3, to meet the straight line assumption upon which the Pearson correlation and the regression statistical techniques are based, one or more data transformations were required to obtain as much symmetry as possible in the data distribution. Appendix D contains a Pearson correlation matrix for each of the nine universities studied as well as the pooled data from all nine universities. Correlations were obtained for the untransformed variables along with the variable transformed with $\log_{10}$ and square root functions. Appendix E contains plots for the standardized residuals corresponding to each of the ten regression analyses carried out.

## ANALYSIS OF POOLED UNIVERSITY DATA

Tables 25 and 26 provide the results of the stepwise regression carried out on the independent variables with full-time participation and part-time participation respectively, with the CCS or home area as the unit of analysis and for all university data pooled. As in all of the regression tables presented in this chapter, the first column indicates the sequence in which the independent variables were entered into the regression equation; the second column identifies the independent variable entered; the third column indicates the transformation required for the independent variable; column four provides the square of the multiple correlation or coefficient of determination as it increases in value with the addition of each independent variable; column five displays the contribution of each independent variable to the multiple correlation; and, the sixth and seventh columns provide standardized beta

# Table 25

## STEPWISE REGRESSION ON POOLED UNIVERSITY DATA
## DEPENDENT VARIABLE = Log (Full-time Participation)

| | | | | | Standardized Beta | |
|---|---|---|---|---|---|---|
| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | 6 step | 4 step |
| 1. | Av. Fam. Income | None | 0.36 | 0.36 | -0.30 | -0.33 |
| 2. | Distance** | None | 0.48 | 0.12 | -0.38 | -0.39 |
| 3. | % With University | Sq. Rt. | 0.49 | 0.01 | -0.16 | -0.15 |
| 4. | Av. Fam. Size | None | 0.50 | 0.01 | +0.06 | +0.07 |
| 5. | % Unemployed | Sq. Rt. | 0.50 | 0.0 | -0.05* | - |
| 6. | % Under 25 yrs. | None | 0.50 | 0.0 | +0.22* | - |

Constant: 6 step = +0.77, 4 step = +0.73

* B ± (2 Std. Error B's) included B = 0

** As Step No. 1, Distance $r^2$ = 0.30 and B range did not include B = 0

Table 26

STEPWISE REGRESSION ON POOLED UNIVERSITY DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta<br>6 step | <br>4 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | None | 0.46 | 0.46 | -0.33 | -0.37 |
| 2. | Distance** | None | 0.50 | 0.04 | -0.22 | -0.23 |
| 3. | % With University | None | 0.54 | 0.04 | -0.26 | -0.24 |
| 4. | Av. Fam. Size | None | 0.55 | 0.01 | +0.11 | +0.12 |
| 5. | % Unemployed | Sq. Rt. | 0.55 | 0.0 | -0.06* | - |
| 6. | % Under 25 yrs. | None | 0.55 | 0.0 | +0.02* | - |

Constant: 6 step = +0.01, 4 step = -0.02
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.22 and B range did not include B = 0

or partial coefficients. Column number six provides the standardized partial coefficients for each independent variable when all six had been entered regardless of how useful they were as predictors. However, some independent variables were excluded from consideration because there was a greater than five percent probability that their partial coefficient would include zero. Thus column seven contains the standardized partial coefficient for only those independent variables with a partial coefficient range which did not include zero. As noted below each regression table, the unstandardized partial coefficient range for the analysis was based on B ± 2 standard error B's to ensure that due to error in prediction, the probability was less than five percent that B could be equal to zero. Because distance was the primary independent variable under investigation in the study, when distance did not rank as the best predictor of the six being considered a footnote below the table recorded how much of the variation in participation distance would have been accounted for had it been entered into the regression analysis first, without the influence of the other variables.

All data displayed in the regression table were rounded off to the nearest one hundredth. However, rounding off errors remained relatively small until independent variables were encountered in the table which contributed marginally to the variation in the dependent variable.

Tables 25 and 26 for pooled university data indicate that average family income was the best predictor for full- and part-time participation. Coupled with distance, the two variables accounted for close to fifty percent of the variation in both full- and part-time participation. For full-time participation the percentage of the

population with university and the average family size accounted for an additional one percent each, while for the part-time participation the percent with university and average family size accounted for an additional four percent and one percent respectively.

Since distance was the primary variable under investigation, it was observed that when distance was entered first by itself, it accounted for thirty percent of the variation in full-time participation compared to the thirty-six percent attributed to income. For part-time participation, only twenty-two percent of the variation was accounted for by distance compared to forty-six percent for income by itself.

Transformations applied to the variables in the regression for full-time participation included the log of the dependent variable and the square root of percent with university and percent unemployed. The remaining four variables were left untransformed. For part-time participation, the log function was applied to the dependent variable while square root was used for percent unemployed with the remaining variables left unaltered.

## ANALYSIS OF INDIVIDUAL UNIVERSITY DATA

The results of stepwise regression analysis applied to the data for each of the nine universities in the study are displayed and reviewed below.

### The University of Victoria

Tables 27 and 28 represent the outcome of regression analysis for the University of Victoria data. The analysis eliminated percent

Table 27

STEPWISE REGRESSION ON UNIVERSITY OF VICTORIA DATA
DEPENDENT VARIABLE = Full-time Participation

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Distance | Log | 0.48 | 0.48 | -0.81 | -0.80 |
| 2. | Av. Fam. Size | Log | 0.51 | 0.03 | +0.23 | +0.23 |
| 3. | Av. Fam. Income | Log | 0.55 | 0.04 | +0.16 | +0.18 |
| 4. | % Unemployed | Log | 0.55 | 0.0 | +0.06* | - |
| 5. | % With University | Log | 0.55 | 0.0 | +0.04* | - |
| 6. | % Under 25 yrs. | None | 0.55 | 0.0 | +0.03* | - |

Constant: 6 step = -2.47, 3 step = -2.73
* B ± (2 Std. Error B's) included B = 0

Table 28

STEPWISE REGRESSION ON UNIVERSITY OF VICTORIA DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | Distance | Log | 0.28 | 0.28 | -0.59 | -0.62 |
| 2. | % With University | Log | 0.41 | 0.13 | -0.38 | -0.36 |
| 3. | % Unemployed | Log | 0.42 | 0.01 | -0.06* | - |
| 4. | Av. Fam. Size | Log | 0.42 | 0.00 | +0.13* | - |
| 5. | % Under 25 yrs. | None | 0.43 | 0.01 | +0.19* | - |
| 6. | Av. Fam. Income | Sq. Rt. | 0.43 | 0.0 | +0.08* | - |

Constant: 6 step = +1.60, 2 step = +3.14
* B ± (2 Std. Error B's) included B = 0

unemployed, percent with university, and percent under 25 years as meaningful predictors for full-time participation. Variables eliminated as predictors of part-time participation included percent unemployed, average family size, percent under 25 years, and average family income. Distance accounted for forty-eight percent of the full-time participation with average family size and average family income accounting for an additional three to four percent, respectively. Taken together, they accounted for a total of fifty-five percent of the variation in full-time participation. Examination of Table 28 indicates that distance was again the best predictor of part-time participation, accounting for twenty-eight percent of the variation. The second best predictor for part-time participation was percent with university, which contributed an additional thirteen percent, so that the two predictors together accounted for a total of forty-one percent of the variation in part-time participation.

Transformations required for the full-time participation analysis, included the application of logs to all of the independent variables except for percent under 25 years. The dependent variable for full-time participation remained untransformed for the analysis. For the part-time analysis, log was applied to the dependent variable and all of the independent variables except for percent under 25 years and average family income. The former was left unaltered whereas the latter was transformed using the square root function.

### The University of British Columbia

For the University of British Columbia, Table 29 demonstrates that only one of the six independent variables was a meaningful predictor for

full-time participation. Percentage unemployed was the best predictor of participation, but it only accounted for twenty-four percent of the variation in full-time participation from area to area. Distance, by itself, accounted for twelve percent of the variation compared to the twenty-four percent accounted for by the percent unemployed variable. When distance was entered into the regression analysis first, its partial coefficient range did not include zero at the five percent level established for this analysis.

Table 30 illustrates that only two variables were meaningful predictors of part-time participation for the University of British Columbia--percent with university which accounted for twenty percent of the variation, and percent unemployed which accounted for an additional nine percent. Thus, together, the two variables accounted for twenty-nine percent of the variation in part-time participation with the remaining four variables rejected as meaningful predictors.

Transformations required for the full-time participation analysis included using the log of the dependent variable and the log of both percent unemployed and percent under 25 years. The square root function was applied to percent with university and to average family size while no transformations were needed for distance and percent under 25 years.

### The University of Lethbridge

Table 31 exhibits two meaningful predictors for full-time participation out of the six variables tested. Distance ranked as the best predictor, accounting for sixty-two percent of the variation in full-time participation while average family size accounted for an additional nine percent for a total of seventy-one percent accounted for

Table 29

STEPWISE REGRESSION ON UNIVERSITY OF BRITISH COLUMBIA DATA
DEPENDENT VARIABLE = Log (Full-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 1 step |
|---|---|---|---|---|---|---|
| 1. | % Unemployed | Log | 0.24 | 0.24 | +0.34 | +0.49 |
| 2. | % With University | Sq. Rt. | 0.28 | 0.04 | -0.26* | - |
| 3. | Distance** | None | 0.32 | 0.04 | -0.24* | - |
| 4. | % Under 25 yrs. | None | 0.32 | 0.00 | +0.08* | - |
| 5. | Av. Fam. Size | Sq. Rt. | 0.33 | 0.00 | -0.05* | - |
| 6. | Av. Fam. Income | Log. | 0.33 | 0.00 | +0.01* | - |

Constant: 6 step = -0.19, 1 step = -2.07
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.12 and B range did not include B = 0

# Table 30

## STEPWISE REGRESSION ON UNIVERSITY OF BRITISH COLUMBIA DATA
## DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | % With University | Log | 0.20 | 0.20 | -0.25 | -0.37 |
| 2. | % Unemployed | Sq. Rt. | 0.29 | 0.09 | +0.26 | +0.31 |
| 3. | % Under 25 yrs. | Log | 0.31 | 0.02 | +0.18* | - |
| 4. | Distance ** | None | 0.32 | 0.01 | -0.19* | - |
| 5. | Av. Fam. Size | None | 0.33 | 0.01 | +0.18* | - |
| 6. | Av. Fam. Income | None | 0.33 | 0.0 | -0.04* | - |

Constant: 6 step = -3.05, 2 step = +0.43
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = .01 and B range did not include B = 0

between the two variables. Table 32 for part-time participation, places distance as the second best predictor accounting for an additional twenty-two percent over and above the fifty-nine percent accounted for by the best predictor--average family income. The third best predictor, percent with university, contributed an additional four percent so that the three variables together accounted for a total of eighty-five percent of the variation in part-time participation. Had distance been entered first by itself in the participation analysis, it would have accounted for thirty-two percent compared to the fifty-nine percent of the variation in participation accounted for by the average family income.

Transformations required for the analysis of full-time participation involved taking the log of: distance, percent with university, average family income, and percent unemployed. Average family size, percent under 25 years, and the dependent variable were left unaltered. For the part-time participation analysis, the log transformation was applied to: the dependent variable, distance, percent under 24 years, average family size, and the percent unemployed variables while percent with university and average family income were left unaltered.

### The University of Calgary

Distance was the best predictor for full- and part-time participation rates for the University of Calgary. Both full- and part-time participation had two meaningful predictors. For full-time participation, Table 33 shows that average family income accounted for twenty-seven percent of the variation in full-time participation over and

Table 31

STEPWISE REGRESSION ON UNIVERSITY OF LETHBRIDGE DATA
DEPENDENT VARIABLE = Full-time Participation

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | Distance | Log | 0.62 | 0.62 | -0.75 | -0.71 |
| 2. | Av. Fam. Income | None | 0.71 | 0.09 | +0.17 | +0.31 |
| 3. | % Under 25 yrs. | None | 0.73 | 0.02 | +0.19* | - |
| 4. | % With University | Log | 0.73 | 0.00 | +0.22* | - |
| 5. | Av. Fam. Size | Log | 0.74 | 0.01 | -0.28* | - |
| 6. | % Unemployed | Log | 0.76 | 0.02 | +0.16* | - |

Constant: 6 step = +6.55, 2 step = -0.03
* B ± (2 Std. Error B's) included B = 0

Table 32

STEPWISE REGRESSION ON UNIVERSITY OF LETHBRIDGE DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | None | 0.59 | 0.59 | -0.33 | -0.53 |
| 2. | Distance** | Log | 0.81 | 0.22 | -0.51 | -0.49 |
| 3. | % With University | None | 0.85 | 0.04 | -0.36 | -0.26 |
| 4. | % Under 25 yrs. | Log | 0.86 | 0.01 | -0.17* | - |
| 5. | Av. Fam. Size | Log | 0.87 | 0.10 | +0.08* | - |
| 6. | % Unemployed | Log | 0.87 | 0.00 | -0.04* | - |

Constant: 6 step = +4.73, 3 step = +4.16

* B ± (2 Std. Error B's) included B = 0

** As Step No. 1, Distance $r^2$ = 0.32 and B range did not include B = 0

above the twenty percent accounted for by distance. Together, the two variables accounted for forty-seven percent of the variation, with average family income accounting for an additional twenty-seven percent of the variation in participation compared to the first twenty percent accounted for by distance alone. However, when entered first by itself, average family income accounted for only eighteen percent of the variation compared to the twenty percent accounted for by distance.

For part-time participation, Table 34 demonstrates that percent with university was the second best predictor accounting for eleven percent of the variation in part-time participation over and above the sixty-four percent accounted for by distance as the best predictor. Together, distance and percent with university accounted for seventy-five percent of the variation in part-time participation.

Transformations required for the analysis of full-time participation were the log of: distance, average family income , percent under 25 years, and percent with university. Neither average family size nor percent unemployed required a transformation. For the part-time participation analysis, logs were applied to the dependent variable and the average family income, with the square root function applied to percent with university and percent unemployed. Average family size and percent under 25 years were left unaltered.

### The University of Alberta

Table 35 illustrates the three best predictors for full-time participation in order of their predictive strength, with distance accounting for twenty-nine percent of the variation, percent with university accounting for another sixteen percent, and percent unemployed

Table 33

STEPWISE REGRESSION ON UNIVERSITY OF CALGARY DATA
DEPENDENT VARIABLE = Log (Full-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | Distance | Log | 0.20 | 0.20 | -0.54 | -0.54 |
| 2. | Av. Fam. Income | Log | 0.47 | 0.27 | -0.58 | -0.52 |
| 3. | Av. Fam. Size | None | 0.49 | 0.02 | -0.19* | - |
| 4. | % Under 25 yrs. | Log | 0.51 | 0.02 | +0.14* | - |
| 5. | % With University | Log | 0.51 | 0.0 | +0.03* | - |
| 6. | % Unemployed | None | 0.51 | 0.0 | -0.02* | - |

Constant: 6 step = +16.39, 2 step = +15.14

* B ± (2 Std. Error B's) included B = 0

Table 34

STEPWISE REGRESSION ON UNIVERSITY OF CALGARY DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | 2 step |
|---|---|---|---|---|---|---|
| 1. | Distance | None | 0.64 | 0.64 | -0.60 | -0.65 |
| 2. | % With University | Sq. Rt. | 0.75 | 0.11 | -0.77 | -0.36 |
| 3. | Av. Fam. Income | Log | 0.76 | 0.01 | +0.48* | - |
| 4. | Av. Fam. Size | None | 0.77 | 0.01 | +0.10* | - |
| 5. | % Unemployed | Sq. Rt. | 0.77 | 0.0 | -0.07* | - |
| 6. | % Under 25 yrs. | None | 0.77 | 0.0 | -0.06* | - |

Constant: 6 step = -21.40, 2 step = +0.83

* B ± (2 Std. Error B's) included B = 0

accounting for still another five percent. Together, the three meaningful predictors accounted for fifty percent of the variation in full-time participation.

The best predictors for part-time participation are exhibited in Table 36. The only two meaningful predictors--percent with university and percent under 25 years--together account for forty-seven percent of the variation, with percent with university as the best predictor accounting for forty-one percent of the variation in part-time participation.

Transformations required for the analysis of the full-time participation required the use of logs with: percent with university, average family size, and average family income while the square root function was applied to distance. The dependent variable, percent unemployed, and percent under 25 years did not require transformation. For the part-time participation analysis, the log transformation was used for the dependent variable, the percent with university, and the percent under 25, while the remaining variables were left unaltered.

## The University of Saskatchewan

Tables 37 and 38 describe the outcome of stepwise regression analysis for the full- and part-time participation respectively at the University of Saskatchewan. Table 37 illustrates that three of the six independent variables were meaningful predictors of full-time participation and together accounted for fifty percent of the variation in full-time participation. Distance was the best predictor and accounted for thirty-four percent of the variation, with percent with university accounting for an additional thirteen percent and average family income a subsequent three percent.

Table 35

STEPWISE REGRESSION ON UNIVERSITY OF ALBERTA DATA
DEPENDENT VARIABLE = Full-time Participation

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Distance | Sq. Rt. | 0.29 | 0.29 | -0.39 | -0.37 |
| 2. | % With University | Log | 0.45 | 0.16 | -0.24 | -0.36 |
| 3. | % Unemployed | None | 0.50 | 0.05 | -0.16 | -0.25 |
| 4. | Av. Fam. Size | Log | 0.51 | 0.01 | +0.12* | - |
| 5. | % Under 25 yrs. | None. | 0.51 | 0.01 | +0.08* | - |
| 6. | Av. Fam. Income | Log | 0.52 | 0.00 | -0.08* | - |

Constant: 6 step = +2.38, 2 step = +1.95

* B ± (2 Std. Error B's) included B = 0

Table 36

STEPWISE REGRESSION ON UNIVERSITY OF ALBERTA DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | 2 step |
|---|---|---|---|---|---|---|
| 1. | % With University | Log | 0.41 | 0.41 | -0.40 | -0.57 |
| 2. | % Under 25 yrs. | Log | 0.47 | 0.06 | +0.25 | +0.25 |
| 3. | Av. Fam. Size | None | 0.50 | 0.03 | +0.15* | - |
| 4. | Distance** | None | 0.51 | 0.01 | -0.14* | - |
| 5. | Av. Fam. Income | None. | 0.51 | 0.00 | -0.10* | - |
| 6. | % Unemployed | Sq. Rt. | 0.51 | 0.00 | +0.05* | - |

Constant: 6 step = -3.26, 2 step = -1.24
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.10 and B range did not include B = 0

The transformations required for analysis of the full-time participation, involved taking the log of the dependent variable and percent under 25 years, and the square root of the percent unemployed. The other variables remained unaltered. For the analysis of the part-time participation the only transformations required were the log of the dependent variable and the square root of the percent unemployed.

## The University of Regina

Analysis of the full-time participation for the University of Regina illustrated in Table 39, revealed that the best predictors in order of predictive power, were distance, which accounted for fifty-one percent of the variation in full-time participation, average family income accounting for an additional sixteen percent and average family size which accounted for still another five percent. Together, all three variables accounted for seventy-one percent of the variation in full-time participation.

Table 40 indicates that for part-time participation the average family income was the best predictor accounting for thirty-eight percent of the variation in part-time participation. The other two meaningful predictors in order of predictive power, were percent unemployed accounting for an additional six percent followed by percent with university accounting for still an additional one percent. Taken together, the three variables accounted for fifty-one percent of the variation in part-time participation. Distance was discarded as a meaningful predictor of part-time participation at the University of Regina.

Transformations required for the full-time participation analysis included the application of logs to the dependent variable and percent

Table 37

STEPWISE REGRESSION ON UNIVERSITY OF SASKATCHEWAN DATA
DEPENDENT VARIABLE = Log (Full-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Distance | None | 0.34 | 0.34 | -0.53 | -0.53 |
| 2. | % With University | None | 0.47 | 0.13 | -0.25 | -0.24 |
| 3. | Av. Fam. Income | None | 0.50 | 0.03 | -0.20 | -0.22 |
| 4. | % Under 25 yrs. | Log | 0.51 | 0.01 | -0.08* | - |
| 5. | % Unemployed | None | 0.51 | 0.01 | -0.01* | - |
| 6. | Av. Fam. Size | Sq. Rt. | 0.51 | 0.0 | -0.04* | - |

Constant: 6 step = +1.78, 3 step = +1.29

* B ± (2 Std. Error B's) included B = 0

Table 38

STEPWISE REGRESSION ON UNIVERSITY OF SASKATCHEWAN DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | None | 0.44 | 0.44 | -0.38 | -0.39 |
| 2. | Distance | None | 0.56 | 0.12 | -0.37 | -0.38 |
| 3. | % With University | None | 0.58 | 0.02 | -0.17 | -0.20 |
| 4. | Av. Fam. Size | None | 0.59 | 0.01 | +0.09* | - |
| 5. | % Under 25 yrs. | None | 0.59 | 0.0 | +0.05* | - |
| 6. | % Unemployed | Sq. Rt. | 0.59 | 0.01 | -0.02* | - |

Constant: 6 step = +0.65, 3 step = +1.56
* B ± (2 Std. Error B's) included B = 0

# Table 39

## STEPWISE REGRESSION ON UNIVERSITY OF REGINA DATA DEPENDENT VARIABLE = Log (Full-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 4 step |
|---|---|---|---|---|---|---|
| 1. | Distance | None | 0.51 | 0.51 | -0.52 | -0.53 |
| 2. | Av. Fam. Income | None | 0.66 | 0.16 | -0.28 | -0.30 |
| 3. | Av. Fam. Size | None | 0.71 | 0.05 | +0.16 | +0.18 |
| 4. | % With University | None | 0.72 | 0.01 | -0.19 | -0.18 |
| 5. | % Unemployed | Sq. Rt. | 0.73 | 0.01 | -0.08* | - |
| 6. | % Under 25 yrs. | Log | 0.73 | 0.01 | -0.02* | - |

Constant: 6 step = +0.23, 4 step = -0.57

* B ± (2 Std. Error B's) included B = 0

Table 40

STEPWISE REGRESSION ON UNIVERSITY OF REGINA DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 3 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | None | 0.38 | 0.38 | -0.94 | -0.31 |
| 2. | % Unemployed | Sq. Rt. | 0.45 | 0.07 | -0.28 | -0.30 |
| 3. | % With University | None | 0.51 | 0.06 | -0.10 | -0.31 |
| 4. | Distance** | Log | 0.52 | 0.01 | -0.10* | - |
| 5. | Av. Fam. Size | None | 0.52 | 0.0 | +0.06* | - |
| 6. | % Under 25 yrs. | Log | 0.53 | 0.0 | -0.03* | - |

Constant: 6 step = +0.87, 3 step = +0.85
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.01 and B range included B = 0

under 25 years in addition to the square root of percent unemployed. The remaining variables were not altered. Transformations applied to the variable prior to the part-time participation analysis were the use of logs to: the dependent variable, distance, and percent under 25 years, while the square root was applied to the percent unemployed. The remaining variables were left unaltered.

### Brandon University

Table 41 summarizes the results of the analysis of Brandon University full-time participation and demonstrates that there were three meaningful predictors for full-time participation. In order of predictive power, they were average family income which accounted for forty-one percent of the variation in full-time participation, percent with university accounting for an additional four percent, and distance which accounted for an additional six percent. Thus, taken together, the three variables accounted for fifty-one percent of the variation in full-time participation. Although distance ranked as the third best predictor, when entered first without the influence of the other variables, distance accounted for nineteen percent of the variation in full-time participation compared to the forty-one percent accounted for by average family income.

An analysis of the part-time participation for Brandon University illustrated in Table 42, revealed average family income as the only meaningful predictor which accounted for sixty-four percent of the variation. However, had distance been entered by itself without the influence of average family income and the other variables, it would have accounted for twenty-four percent of the variation in part-time participation.

Table 41

STEPWISE REGRESSION ON BRANDON UNIVERSITY DATA
DEPENDENT VARIABLE = Log (Full-time Participation)

| | | | | | Standardized Beta | |
|---|---|---|---|---|---|---|
| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | 6 step | 3 step |
| 1. | Av. Fam. Income | Log | 0.41 | 0.41 | -0.20 | -0.24 |
| 2. | % With University | Sq. Rt. | 0.45 | 0.04 | -0.40 | -0.40 |
| 3. | Distance** | Sq. Rt. | 0.51 | 0.06 | -0.33 | -0.29 |
| 4. | % Under 25 yrs. | None | 0.53 | 0.02 | +0.13* | - |
| 5. | % Unemployed | Sq. Rt. | 0.53 | 0.0 | -0.06* | - |
| 6. | Av. Fam. Size | None | 0.53 | 0.0 | +0.06 | - |

Constant: 6 step = +3.78, 3 step = +4.91
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.19 and B range did not include B = 0

Table 42

STEPWISE REGRESSION ON BRANDON UNIVERSITY DATA
DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta<br>6 step | <br>1 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | Log | 0.64 | 0.64 | -0.60 | -0.80 |
| 2. | % With University | Log | 0.65 | 0.01 | -0.19* | - |
| 3. | % Under 25 yrs. | Log | 0.66 | 0.01 | -0.17* | - |
| 4. | % Unemployed | Sq. Rt. | 0.67 | 0.01 | +0.10* | - |
| 5. | Av. Fam. Size | Log | 0.67 | 0.0 | +0.11* | - |
| 6. | Distance** | Sq. Rt. | 0.68 | 0.01 | -0.11* | - |

Constant: 6 step = +14.26, 1 step = +17.2
* B ± (2 Std. Error B's) included B = 0
** As Step No. 1, Distance $r^2$ = 0.24 and B range did not include B = 0

Transformations required for the full-time analysis included the use of logs for the dependent variable and for average family income, and the use of square root for percent with university, distance, and percent unemployed. The percent under 25 years variable and average family size did not require transformation prior to analysis. The part-time participation analysis required the application of logs to: the dependent variable, average family income, percent with university, percent under 25 years, and average family size. The square root function was applied to the remaining two variables for part-time participation.

### The University of Manitoba

The two meaningful predictors for full-time participation at the University of Manitoba were distance and average family income, respectively. Table 43 illustrates that together the two predictors accounted for fifty-two percent of the variation in full-time participation at the University of Manitoba, with distance accounting for thirty-five percent of the variation and average family income accounting for an additional seventeen percent.

From Table 44 it is evident that for part-time participation the best predictors were the same as for the full-time participation, only in the reverse order of predictive power. Average family income accounted for twenty-one percent of the variation in part-time participation while distance accounted for an additional eight percent. Taken together, they accounted for twenty-nine percent of the variation. However, distance by itself without the influence of average family income or the other variables, accounted for nineteen percent compared to average family income accounting for twenty-one percent by itself.

Table 43

STEPWISE REGRESSION ON UNIVERSITY OF MANITOBA DATA
DEPENDENT VARIABLE = Log (Full-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | Distance | None | 0.35 | 0.35 | -0.44 | -0.46 |
| 2. | Av. Fam. Income | Sq. Rt. | 0.52 | 0.17 | -0.35 | -0.43 |
| 3. | % Under 25 yrs. | Log | 0.53 | 0.01 | -0.10* | - |
| 4. | Av. Fam. Size | Sq. Rt. | 0.54 | 0.01 | +0.08* | - |
| 5. | % Unemployed | Sq. Rt. | 0.54 | 0.0 | -0.06* | - |
| 6. | % With University | Log | 0.54 | 0.0 | -0.06* | - |

Constant: 6 step = +1.11, 2 step = +1.55
* B ± (2 Std. Error B's) included B = 0

# Table 44

## STEPWISE REGRESSION ON UNIVERSITY OF MANITOBA DATA
## DEPENDENT VARIABLE = Log (Part-time Participation)

| Step Number | Independent Variable Entered | Transformation | $r^2$ | $r^2$ change | Standardized Beta 6 step | Standardized Beta 2 step |
|---|---|---|---|---|---|---|
| 1. | Av. Fam. Income | None | 0.21 | 0.21 | -0.08 | -0.34 |
| 2. | Distance** | None | 0.29 | 0.08 | -0.31 | -0.31 |
| 3. | % With University | None | 0.32 | 0.04 | -0.28* | - |
| 4. | % Unemployed | Sq. Rt. | 0.34 | 0.02 | -0.11* | - |
| 5. | % Under 25 yrs. | Log | 0.34 | 0.0 | -0.08* | - |
| 6. | Av. Fam. Size | None | 0.34 | 0.0 | +0.04* | - |

Constant: 6 step = +0.65, 2 step = +0.41

* B ± (2 Std. Error B's) included B = 0

** As Step No. 1, Distance $r^2$ = 0.19 and B range did not include B = 0

Transformations needed to analyze the variation in full-time participation included the use of logs for: the dependent variable, percent under 25 years, and percent with university, while the square root function was applied to average family income, average family size, and percent unemployed. Distance did not require a transformation. For the analysis of part-time participation, logs were applied to the dependent variable and percent under 25 years with square root used on percent unemployed. The remaining four independent variables did not require transformations.

## OVERVIEW OF PREDICTORS FOR THE NINE UNIVERSITIES

Tables 45 and 46 illustrate the results of the weighted ranking of the six independent variables as to their utility as predictors of full- and part-time participation within the nine university catchment areas. Tables 45 and 46 exhibit the frequency with which each of the six predictors occurred in the various ranks as predictors of university participation. Each rank was weighted, with the first rank assuming a value of four, the second rank with a weighting factor of three, the third with a weighting of two, the fourth with a weighting of one, and with variables which were meaningless as predictors of participation receiving a weighting of zero. The predictors were then ranked by the size of their weighted totals. The predictor with the largest weighted total was identified as the strongest predictor over all of the nine universities. Examination of the weighted totals of the six independent variables for full-time participation indicated that distance ranked

number one as a predictor, with average family income ranking second, percent with university third, average family size fourth, percent unemployed fifth, and percent under 25 years, sixth. The latter was not once demonstrated to be a meaningful predictor of full-time participation.

For part-time participation, average family income ranked first, distance ranked second along with percent with university, percent under 25 years was ranked third, percent unemployed fourth, and average family size last. Average family size was not listed once as a predictor of part-time participation.

Table 47 summarizes the frequency and direction of the relationships between the meaningful predictors and full- and part-time participation. The three most powerful predictors of the six variables tested were distance, average famly income (five years earlier), and percentage of the population with prior university education. From published research reviewed earlier related to the variables tested, family income was anticipated to be positively related to university participation, distance was expected to be negatively related to university participation, and percentage of the population with prior university positively related to university participation. The outcomes of the study were as expected for the distance variable with distance negatively correlated with university participation. However, somewhat surprising was the outcome that average family income of five years earlier and the percentage of the population with prior university education were also negatively correlated with university participation. In addition, a fourth predictor--average family size--was expected to be negatively correlated but turned out to be positively correlated with

Table 45

FREQUENCY OF PREDICTOR RANKS FOR FULL-TIME PARTICIPATION IN THE NINE UNIVERSITIES AND WEIGHTED PREDICTOR RANKS

| Independent Variable | Frequencies and Weighted Frequencies | | | | | Weighted Total | Rank |
|---|---|---|---|---|---|---|---|
| | 1 (Wt=4) | 2 (Wt=3) | 3 (Wt=2) | 4 (Wt=1) | 0 (Wt=0) | | |
| Distance | 7(28) | 0(0) | 1(2) | 0(0) | 2(0) | 29 | 1 |
| Average Family Income | 1(4) | 3(9) | 0(0) | 0(0) | 4(0) | 17 | 2 |
| % With University Education | 0(0) | 3(9) | 1(2) | 1(1) | 3(0) | 12 | 3 |
| Average Family Size | 0(0) | 2(6) | 1(2) | 0(0) | 5(0) | 8 | 4 |
| % Unemployed | 1(4) | 0(0) | 1(2) | 0(0) | 6(0) | 6 | 5 |
| % Under 25 years | 0(0) | 0(0) | 0(0) | 0(0) | 9(0) | 0 | 6 |

( ) weighted rank

Table 46

FREQUENCY OF PREDICTOR RANKS FOR PART-TIME PARTICIPATION IN THE NINE UNIVERSITIES AND WEIGHTED PREDICTOR RANKS

| Independent Variable | Frequencies and Weighted Frequencies | | | | | Weighted Total | Rank |
|---|---|---|---|---|---|---|---|
| | 1 (Wt=4) | 2 (Wt=3) | 3 (Wt=2) | 4 (Wt=1) | 0 (Wt=0) | | |
| Distance | 2(8) | 3(9) | 0(0) | 0(0) | 4(0) | 17 | 2 |
| Average Family Income | 6(24) | 0(0) | 0(0) | 0(0) | 3(0) | 24 | 1 |
| % With University Education | 2(8) | 1(3) | 3(6) | 0(0) | 1(0) | 17 | 2 |
| Average Family Size | 0(0) | 0(0) | 0(0) | 0(0) | 9(0) | 0 | 5 |
| % Unemployed | 0(0) | 2(6) | 0(0) | 0(0) | 6(0) | 6 | 4 |
| % Under 25 years | 0(0) | 1(6) | 0(0) | 0(0) | 6(0) | 6 | 3 |

( ) weighted rank

Table 47

The Frequency and Direction of the Relationships Between Meaningful Predictors and the Dependent Variables for Nine Universities

| | Full-Time Participation | | Part-Time Participation | |
|---|---|---|---|---|
| Predictor | Frequency | Direction of the Relationship | Frequency | Direction of the Relationship |
| Distance | 8 | - | 5 | - |
| Average Family Income | 3<br>1 | -<br>+ | 6 | - |
| % Unemployed | 1<br>1 | +<br>- | 1<br>1 | +<br>- |
| % With University | 4 | - | 6 | - |
| % Under 25 | 0 | N/A | 1 | - |
| Average Family Size | 3 | + | 0 | N/A |

full-time university participation the three times it was a meaningful predictor of participation.

The outcome for the variable percentage unemployed was inconclusive in that for the four instances it was a meaningful predictor, it was negatively correlated twice and positively correlated twice with university participation. A second, perhaps more puzzling anomaly, was that the average family income variable was positively correlated with full-time participation at the University of Victoria while negatively correlated with full-time participation at three other universities and negatively correlated with part-time participation at six universities.

## Findings

Observation no. 1. Of the six variables tested, those that were meaningful predictors of full-time university participation are listed below in rank order of their predictive power.

a) Pooled University Data: average family income; distance; percentage of the population with prior university; and, average family size.

b) The University of Victoria: distance, average family size; and, average family income.

c) The University of British Columbia: percentage of prospective students unemployed.

d) The University of Lethbridge: distance and average family income.

e) The University of Calgary: distance and average family income.

f) The University of Alberta: distance, percentage with prior university; and, percentage unemployed.

g) The University of Saskatchewan: distance; percentage with university; and, average family income.

h) The University of Regina: distance; average family income; average family size; and, percentage with prior university.

i) Brandon University: average family income; percentage with prior university; and, distance.

j) The University of Manitoba: distance and average family income.

Observation no. 2. Of the six variables tested, those that were meaningful predictors of part-time university participation are listed below in rank order of their predictive power.

a) Pooled University Data: average family income; distance; percentage of the population with prior university; and, average family size.

b) The University of Victoria: distance and percentage of the population with prior university.

c) The University of British Columbia: percentage of the population with prior university and percentage unemployed.

d) The University of Lethbridge: average family income; distance; and, percentage of the population with prior university.

e) The University of Calgary: distance and the percentage of the population with prior university.

f) The University of Alberta: percentage with prior university and percentage under the age of twenty-five.

g) The University of Saskatchewan: average family income; distance; and, percentage with prior university.

h) The University of Regina: average family income; percentage unemployed; and, percentage with prior university.

i) Brandon University: average family income.

j) The University of Manitoba: average family income and distance.

Observation no. 3. When ordered in terms of predictive power for full-time participation over all nine universities, the six independent variables were as follows;

a) distance;

b) average family income five years earlier;

c) percentage of population with prior university;

d) average family size;

e) percentage unemployed; and,

f) percentage under age twenty-five.

Observation no. 4. When ordered in terms of predictive power for part-time participation over all nine universities, the six independent variables were as follows:

a) average family income five years earlier;

b) distance and percentage with prior university;

c) percentage under twenty-five years;

d) percentage unemployed; and,

e) average family size.

Observation no. 5. The independent variables: distance, percentage of the population with prior university, percentage under the age of twenty-five, and average family income (with the exception of the University of Victoria full-time participation) were negatively correlated with university participation while the independent variable

average family size was positively correlated with university full-time participation.

Observation no. 6. The relationship of the independent variable percentage unemployed to university participation was positive for the University of British Columbia full- and part-time participation, while negative for the University of Regina part-time participation and the University of Alberta full-time participation.

Observation no. 7. Table 48 summarizes the total percentage of the variation in full- and part-time participation accounted for by those of the six independent variables tested which were meaningful predictors of participation. The catchment areas for which the six independent variables were least successful as predictors of university participation were the University of British Columbia full- and part-time catchment areas and the University of Manitoba part-time catchment area with only twenty-four, twenty-nine, and twenty-nine percent of the variation in participation accounted for respectively.

Observation no. 8. Table 48 displays the universities for which the six independent variables were the most successful as predictors of university participation. The universities with the greatest part-/ full-time mean of the total squared multiple correlation ($r^2$) were: the University of Lethbridge with a mean $r^2$ of 0.78, the University of Regina with a mean $r^2$ of 0.62, the University of Calgary with a mean $r^2$ of 0.61, and Brandon University with a mean $r^2$ of 0.58.

Table 48

THE TOTAL PERCENTAGE OF VARIATION ACCOUNTED FOR

| University | Full-Time Participation (% accounted for) | Part-Time Participation (% accounted for) | Mean (%) |
|---|---|---|---|
| Victoria | 55 | 41 | 48 |
| British Columbia | 24 | 29 | 27 |
| Lethbridge | 71 | 85 | 78 |
| Calgary | 47 | 75 | 61 |
| Alberta | 50 | 47 | 49 |
| Saskatchewan | 50 | 58 | 54 |
| Regina | 72 | 51 | 62 |
| Brandon | 51 | 64 | 58 |
| Manitoba | 52 | 29 | 41 |
| Median | 51 | 51 | |

# SUMMARY

Key findings related to the assessment of the relative predictive capability of the six independent variables for full- and part-time university participation, are summarized below.

1. Of the six independent variables tested, the three variables which were generally the best overall predictors of university participation were: distance, average family income five years earlier; and, the percentage of the population with prior university.

2. For full-time participation at the nine universities, distance tended to be the best predictor followed by average family income five years earlier and the percentage of the population with prior university, respectively.

3. For part-time participation at the nine universities, average family income five years earlier tended to be the best predictor followed by distance and percentage of the population with prior university experience--the latter two of which tended to be equally good predictors.

4. With the exception of percentage unemployed and average family size, the variables tended to be negatively related to university participation. Average family size was positively related to full-time participation while percentage unemployed was negatively related to university participation in two instances and positively related in two instances.

5. The four universities for which the six independent variables tended to best predict university participation were: the University of Lethbridge, the University of Regina, the University of Calgary, and

Brandon University, while the university for which the variables tested were the least successful predicting university participation, was the University of British Columbia.

# CHAPTER 6

# SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

## SUMMARY OF THE RESEARCH APPROACH

Declining enrollments in higher education have created considerable alarm in some quarters. Consequently, the design of this study was constructed on the premise that university administrators are concerned about the prospective students and the process of transforming the prospective students to new enrollees at their institutions.

The research approach taken in this study is summarized below under the headings of: Purpose and Study Subproblems, Significance of the Study, and Methodology.

### Purpose and Study Subproblems

The purpose of this study was to examine the relationship of geographic distance and five other home area variables to participation rates in degree granting, public universities in western Canada.

### Subproblems

Three sub-problems were formulated to address the general research problem:

1. What were the characteristics of the catchment areas in 1976, for each of the nine public universities in the population defined for

this study? This sub-problem was examined by answering the following questions:

a) What were the geographic profiles of the various university catchment areas?

b) What was the relative effectiveness of the universities in recruiting new registrants at selected distance intervals?

c) To what extent was the gravity model for population migration applicable to the enrollment of new registrants?

2. What proportion of the variation in university participation could be attributed to distance and five other home area characteristics? This sub-problem was examined by considering the following six home area variables:

a) Distance between the home area and the university;

b) Average family income for the area;

c) Average family size for the area;

d) Percentage of prospective students unemployed;

e) Percentage of prospective students under the age of 25;

f) Percentage of the total population fifteen years and over, having attended university.

3. What similarities and differences existed between full-time and part-time students with respect to sub-problems one and two?

## Significance of the Study

Justification for the study was based on four premises:

1. The study employed a relatively new approach to investigating university participation. As an unobstrusive and quantitative descriptive approach, the study employed computerized cartographic

techniques to process and display large amounts of numerical data.

2. The study contributed to policy development and planning in higher education. It became a vehicle for compiling comparative information describing nine universities--information which was relevant to student participation at those universities and to the competition that existed among them.

3. The study contributed to an aspect of organizational theory having received little attention. It focussed on measures drawn from the "pre-entry environment" of university students which were thought to influence student decision-making prior to university enrollment. The single measure which dominated the attention of the study, was the geographic distance separating the university from the students' home areas.

4. The study provided base-line data regarding descriptive information related to the spatial relationship of undergraduate origins: (a) within each university; (b) between universities within each province; and between universities across provincial borders. As a base-line study, it was intended, in part, to collect bench-mark data for the purposes of comparison with future studies of the same universities in order to measure temporal effects on participation and interuniversity competition--particularly as the periods forecast for enrollment decline, approach and arrive.

## Methodology

The methodology for the study was somewhat unique and represented an innovative approach in educational research. Data collected included 1971 Statistics Canada census data for the average family income, 1976

census data for five additional home area measures, and university information on student origins for each of the nine universities. Collecting information on student origins involved obtaining on magnetic tape the student identifications, their place of origin in 1976, the Faculty in which they first registered, their status (part-time or full-time) at the time of their first registration, and their citizenship status. Subsequently, the student origins were converted to the Census Consolidate Subdivision (CCS) areas defined by Statistics Canada for the 1976 census.

After the data for all nine universities were transformed into a format that was consistent for the nine universities, computer programs were either generated or acquired to calculate the university-home area distances and to display the participation data in a map format. Four map formats were used: a map displaying the distribution of the CCS or home areas across western Canada; the distribution of CCS areas shared by universities within each province and representing interuniversity competition within provinces, and the distribution of CCS areas from which students migrated to universities in adjacent provinces; the distribution of no-response CCS areas within each province and for each university; and, the distribution of participation rates as catchment areas for both full- and part-time students for each university. In addition to mapping, university profiles were prepared to display the participation rates for each university over convenient travel time intervals and over distances divided into fifty mile intervals from the university centre.

Participation data thus displayed were statistically analyzed. Analyses of the six home area measures for each university were carried out through a stepwise regression procedure to assess the relationship of distance and the other five home area measures to full- and part-time participation. Subsequently, a set of meaningful predictors was arrived at for each university which accounted for a specified proportion of the variation in full- and part-time participation. The stepwise regression procedure permitted the entry of each variable one at a time into the regression analysis, thus enabling the ranking of the meaningful predictors in order of their value as predictors.

## CONCLUSIONS

Conclusions drawn from the study are presented below along with supportive evidence and rationale for each conclusion. Related conclusions drawn from the same findings are presented together to prevent redundancy in the reporting of supportive evidence. All conclusions are descriptive and generalizable to the population defined for this study.

### Conclusion No. 1

The participation rates over the range of distance intervals from each university varied for the nine universities studied.

### Conclusion No. 2

Participation rates for full-time students were consistently greater over distances from the university than participation rates for part-time students; consequently, the catchment areas for full-time

students tended to extend further away from the universities than the catchment areas for part-time students.

Evidence to support the above conclusions was drawn from:

1. the contour maps in Figures 4 to 21 describing the university catchment areas;

2. the summary table of descriptive statistics provided for each university (Tables 1 to 9);

3. Tables 10 and 11 illustrating the participation rates for each university at each of the five distance intervals equivalent to convenient travel times; and,

4. Tables 12 and 13 in addition to Figures 22 to 30, the latter of which illustrate the participation rates for the nine universities as they declined over seven fifty-mile distance intervals radiating out from the univerisities.

Conclusion No. 3

The universities most and least effective at recruiting full-time students over distance were:

1. the University of Saskatchewan as the most effective of the nine universities up to 150 miles away, but the least successful at recruiting from potentially valuable but unresponsive CCS areas--particularly CCS areas located within the 75 to 149 mile interval from the university;

2. the University of British Columbia as the least effective of the nine universities up to 75 miles away at which point its performance improved until it was the most successful between 150 miles and 349 miles and second only to the University of Victoria at distances equal or

greater than 350 miles from the university centres; further, the University of British Columbia was replaced at the 75 mile interval as the least successful university by Brandon University and the University of Lethbridge, while at the 150 to 349 mile interval, the University of Lethbridge and the University of Regina ranked as the least successful universities.

Conclusion No. 4

The universities which were most and least successful at recruiting part-time students over distance were:

1. the University of Saskatchewan and the University of Manitoba as the most effective universities up to 150 miles from the university centres, with the University of Manitoba as the most effective of the nine universities at distances greater than 150 miles; however, the University of Saskatchewan was the least successful at recruiting from potentially valuable but unresponsive CCS areas--particularly from CCS areas located within the 75 to 149 mile distance interval from the university;

2. Brandon University and the University of Calgary as the least effective for the first 24 miles from the university centres, with the University of Calgary as the least effective of the nine universities at recruiting part-time students from distances greater than 24 miles from the university centre.

Evidence to support conclusions 3 and 4 above was drawn from the following findings:

1. the percentages of prospective students enrolled by distance from the university, where distance had been broken into intervals based

on convenient travel times (Tables 10 and 11) along with the subsequent ranking of universities for full- and part-time participation at each distance interval (Tables 12 and 13); and,

2. data related to the degree of difficulty the various universities had with no-response areas, the findings of which were displayed in Tables 19, 20, and 21 along with maps describing the spatial relationship of the no-response areas to each other and to the university in Figures 31 to 39.

The university ranks, illustrated in Tables 12 and 13, were used to determine the most and least successful universities at each distance interval; however, the weighted rankings of each university's difficulty with recruiting from no-response areas (Tables 20 and 21) resulted in a caveat being placed on conclusions related to the University of Saskatchewan's high level of success with both part- and full-time participation.

### Conclusion No. 5

Competition between major, public postsecondary institutions in western Canada was a real phenomenon which tended to suppress the full- and part-time participation rates for the universities studied.

### Conclusion No. 6

Very little competition for full- and part-time new enrollees at the undergraduate level existed between provinces, with most of the interuniversity competition generated between universities within the same province.

The evidence and rationale from which conclusions 5 and 6 emerged involved three sets of data. Firstly, an analysis of the participation

rates of each of the nine universities over 50 mile distance intervals from the university centres, through the inspection of Tables 14 and 15, and an examination of the graphs of university profiles with distance, illustrated in Figures 22 to 30, revealed that six of the nine universities experienced abnormal and sharp declines in participation rates at specific distances. Further examination indicated that for five of the universities--the University of Victoria, the University of British Columbia, the University of Lethbridge, the University of Saskatchewan, and the University of Manitoba--the sharp decline in participation occurred at the 100 to 149 mile interval. For the University of British Columbia, a second sharp drop in participation occurred within the 250 to 299 mile distance interval, while for the University of Alberta two depressions in participation also occurred--the first within the 50 to 100 mile interval and the second within the 150 to 200 mile interval.

Secondly, in an attempt to find an explanation for the consistent apparent aberations in the trend lines for participation over distance, a listing of the major postsecondary institutions in western Canada, each with over five hundred students enrolled in the Fall of 1976, was obtained from Statistics Canada (1977:32) and Table 16 prepared. Table 16 illustrated how all of the major postsecondary institutions were located in precisely the same distance intervals where the sharp declines in university participation rates occurred. The latter observation was also true for both depressions in the participation rates for the University of Alberta. In addition, if upward adjustments were made for university-to-home area distances over mountainous terrain, similar to

the adjustments made for the Vancouver Island to mainland water crossing, the second drop in participation rates for the University of British Columbia could be accounted for by the Okanagan Region Community College located in Kelowna and within the 250 to 299 mile interval from the University of British Columbia.

Thirdly, examination of the contour maps illustrated in Figures 4 to 21 and which describe participation rates for the various university catchment areas, revealed that the participation rates for other university centres within a given catchment area, regardless of the distance interval the centres were in, were lower than what might have been expected for that distance. It would appear then, that the participation rates for the university centres were depressed because the centres contained competing universities.

### Conclusion No. 7

Interuniversity competition between universities within each of the provinces studied, resulted in a unique area dominated by each university, with a configuration which fell into one of three patterns subsequently named in this study as: geographic isolation, geographic sprawl, and geographic containment.

The three patterns of dominance emerged from an analysis of the maps displaying interuniversity competition within provinces (Figures 40 to 49). Each map displays where each university in the province was located, where each of the CCS areas shared by two or more of the universities was located, and which universities dominated which of the shared CCS's. In addition, the total area dominated by each university in the province were separated and identified on the maps by a continuous

line around the area(s) of one or more of the universities.

The three patterns which emerged are defined as follows:

1. Geographic isolation occurred in a province when the areas of competition (shared CCS areas) clustered to form dominated areas which were well-defined around the dominating universities and easily discriminated. Competition between universities in Alberta for both full- and part-time students, for example, assumed a pattern of geographic isolation as displayed in Figure 42 and Figure 43.

2. Geographic sprawl occurred in a province when a university had a small proportion of its dominated area located well within the boundary of the area dominated by a competing university. An example of geographic sprawl was the competition for full-time students between the University of Victoria and the University of British Columbia depicted in Figure 40. A possible second example may be the competition for full-time students within the province of Manitoba illustrated in Figure 46.

3. Geographic containment occurred in a province when the dominated area of one university was more or less surrounded by the dominated areas of a competing university so that the configuration appeared as if one university was containing another to a restricted location. Examples of geographic containment included the competition for part-time students in Manitoba (Figure 47), British Columbia (Figure 41), and Saskatchewan (Figure 45), and the competition for full-time students in Saskatchewan (Figure 44).

Conclusion No. 8

When there was interuniversity competition, the smaller the mean number of prospective students per CCS within the dominated area, the greater the tendency towards a higher participation rate for the dominated area.

Evidence which led to the above conclusion was drawn from Table 22 and Table 23. Table 22 displays data related to the CCS areas dominated, the number of prospective students contained in the dominated area, and the participation rate for the dominated area involving interuniversity competition between universities in provinces adjacent to the area under consideration.

Inspection of Tables 22 and 23 suggested that there was an inverse relationship between the number of prospective students in a dominated area and the rate of participation for the area; however, to control for concentration of population or the number of CCS areas involved, the mean number of prospective students per CCS in the dominated area was calculated. Subsequently, a Pearson correlation was calculated between the mean number of prospective students for each CCS in the areas dominated by universities and the participation rates for those areas. Table 24 displays the four correlations thus derived.

Conclusion No. 9

The two best predictors for both full- and part-time participation in responsive areas tended to be the distance separating students from their home areas and the average family income of their home areas five years earlier. A third minor but consistent predictor of both full- and part-time participation from responsive areas was the percentage of the

population located in the home areas who were over the age of fifteen and had previously attended university.

Conclusion No. 10

Distance exhibiting a negative relationship to university participation, tended to be the best overall predictor for full-time participation from responsive areas, while average family income in the area five years earlier, also exhibiting a negative relationship to university participation tended to be the best predictor of part-time student participation from responsive areas.

Conclusion No. 11

The home area measures of: the percentage of prospective students under the age of twenty-five and the average size of families with one or more children at home tended not to be useful as predictors of either full- or part-time participation from responsive areas.

Findings which supported conclusions 9, 10 and 11 are illustrated in Tables 25 to 46. Tables 25 and 26 displayed findings generated as the result of a stepwise regression analyses on pooled university data; however, by pooling the data of the nine universities their individual characteristics were masked. Although Tables 25 and 26 demonstrated that average family income five years earlier for the area was a better predictor than distance for both full- and part-time participation, average family income only accounted for six percent more of the variation than distance would have, had it been entered first without the influence of average family income and the other variables. For part-time participation, the difference between average family income and distance when other variables were controlled for, was much greater, at

twenty-four percent. Thus, for pooled university data, average family income for the area five years earlier was marginally the best predictor of the six variables for full-time participation. For part-time participation, average family income was by far the best predictor.

Because the pooled data masked the characteristics unique to each of the nine university catchment areas, a similar stepwise regression analysis was conducted for each of the universities. Tables 27 to 44 displayed the findings. To evaluate the overall relative predictability of the six home area measures, while capturing some of the uniqueness of each university, the frequency with which each predictor occurred was tabulated in Tables 45 and 46 by rank. The weighted total for each variable was then used to rank the variable as an overall predictor relative to the other six variables. Thus, in Table 45, distance was ranked as the best predictor with average family income and percentage with university as the second and third best predictors of full-time participation. For part-time participation, Table 46 illustrated that average family income was the best predictor followed by percentage with university and distance--both variables tied for second and third place.

Considering nine individual universities, the independent variable of average family size was not once a meaningful predictor for part-time participation while the percentage of prospective students under the age of twenty-five was not once a meaningful predictor for full-time participation. The apparent discrepancy between average family size not being a meaningful predictor for part-time participation (Table 46) yet being a meaningful predictor for part-time participation in pooled data (Table 25) can be attributed to the variation in the number of cases

involved in the regression analysis and the corresponding prediction error. The fewer cases involved in individual university analyses resulted in greater prediction error and in fewer meaningful predictors which demonstrated a probability of less than five percent that their partial coefficients could equal zero due to prediction error.

### Conclusion No. 12

For the University of British Columbia, full- and part-time students, and the University of Manitoba part-time students, the home area measures tested in this study were not as appropriate as they were for the other catchment areas.

Table 48 summarized the total percentage of the variation in full- and part-time participation accounted for by the meaningful predictors for each university. Three catchment areas where the total percentages of the variation in participation accounted for were approximately half of the median of all of the catchment areas were:

1. the University of British Columbia where the total variation accounted for in full-time participation reached only twenty-four percent;
2. the University of British Columbia where the total variation accounted for in part-time participation was twenty-nine percent; and,
3. the University of Manitoba where the total variation accounted for in part-time participation was also only twenty-nine percent.

One explanation for the little variation accounted for, may be the impact of competition from other major postsecondary institutions in the area. Table 16 illustrated the unusually large number of major non-university postsecondary institutions within the University of British Columbia catchment area, with two institutions on Vancouver

Island and four within the immediate Vancouver area. In addition, the University of British Columbia faced competition from the University of Victoria and from Simon Fraser University from which data were unavailable for this study, but which was also located within the immediate Vancouver area. The University of Manitoba was also confronted with what appears to have been an unusually large element of competition from the two universities and a major community college in its vicinity. Red River Community College, with an enrollment of 2,435 in the Fall of 1976 reported by Statistics Canada (1977:32), was located in Winnipeg. In addition, the University of Winnipeg was located within the city and had close to 3,000 new enrollees most of whom would have been included in the study population had the university been included in the study. Finally, the University of Manitoba was also in competition with Brandon University in the 100 to 149 mile interval.

Thus, it is feasible that students faced with other options and opportunities, were able to choose between postsecondary institutions, and for those universities confronted with unusually intense competition from postsecondary alternatives, the six home area measures may have been less important as predictors of participation than institutional characteristics of the competing universities.

Conclusion No. 13

There were differences in participation between universities identified as "younger" and "smaller" universities for each province, which included: the University of Regina, Brandon University, the University of Calgary, and the University of Lethbridge, and universities identified as "older" and "larger" universities for each province, which

included: the University of British Columbia, the University of Alberta, the University of Saskatchewan, and the University of Manitoba. The University of Victoria participation patterns tended to be a blend of the patterns of both of the above.

Four areas of analysis discussed earlier tended to place the nine universities into one of the two categories. The younger and smaller universities within each province tended to fit into one category whereas the older and more established universities tended to fit into a different category. The four areas of analysis which tended to separate the universities into the two categories were: full-time participation over distance; no-response CCS areas; the fit of the participation rates predicted by the gravity model; and, the home area measures tested as predictors of participation.

Full-time participation over distance. Tables 10 and 12 described the rates of full- and part-time student participation for the nine universities in the study. When examined province by province, the universities with the greatest full-time participation rates were the University of Alberta, the University of Saskatchewan, and the University of Manitoba. In British Columbia, the University of Victoria had the highest participation rate of the two universities with the exception at the 150 to 349 mile interval.

No-response CCS areas. Table 19 exhibited the university in each province with the fewest no-response areas representing the least number of prospective or potential students in unresponsive CCS areas. Those universities were: the University of British Columbia, the University of Alberta, the University of Saskatchewan, and the University of Manitoba.

Predicted Participation Rate. Tables 17 and 18 demonstrated that universities which tended to be over-predicted were: the University of Lethbridge, the University of Calgary, the University of Regina, and Brandon University for full-time participation. For part-time participation, the same four universities tended to be over-predicted with the addition of a fifth university--the University of Victoria. The other universities tended to be either under-predicted or both over- and under-predicted for full- and part-time participation.

Predictors of Participation. Tables 27 to 44 and Table 48 provided findings related to the outcomes of stepwise regression analyses for the six independent variables and part-time and full-time participation. An examination of the total squared multiple correlations ($r^2$) for the meaningful predictors suggested that the total squared multiple correlation ($r^2$) for smaller universities tended to be greater than the total squared multiple correlation ($r^2$) for larger universities. Subsequently, the mean total $r^2$ of the part- and full-time participation at each university was calculated, followed by a ranking of each university according to its mean total $r^2$. The outcome of the ranking was that the University of Lethbridge ranked first with a mean total $r^2$ of 0.78, the University of Regina ranked second with a mean total $r^2$ of 0.62, the University of Calgary third with a mean total $r^2$ of 0.61, and Brandon University with a mean total $r^2$ of 0.58. Examination indicated that there was a difference of greater than 0.07 between the smallest and largest mean $r^2$ separating the two clusters of universities.

Thus, the University of Lethbridge, the University of Calgary, Brandon University, and the University of Regina clearly exhibited different participation characteristics than did the University of British Columbia, the University of Alberta, the University of Saskatchewan, and the University of Manitoba. The University of Victoria tended to demonstrate the characteristics of both groups. One explanation for the "large" university characteristics exhibited by the University of Victoria with respect to participation over distance, may be that the University of British Columbia, against which the University of Victoria was compared, had a participation rate which was somewhat suppressed by extra-ordinary competition located on the lower mainland.

### Conclusion No. 14

There were consistent differences between full-time and part-time students with respect to:

1. the relative predictive power of the six home area measures for student participation;
2. the participation rates over distance from the university;
3. the size of the university catchment areas; and,
4. the location of high participation areas.

Evidence supporting the above conclusions was found:

1. in Tables 45 and 46 where distance tended to be the best predictor for full-time students while average family income five years earlier tended to be the best predictor for part-time students;
2. findings in Tables 10 and 11 and Tables 14 and 15 in addition to the contour maps of the various catchment areas in Figures 4 to 21, illustrated that at a given distance, the participation rate for

full-time students tended to be greater than the participation rate for part-time students;

3. from the maps portrayed in Figures 4 to 21, it was evident that the part-time catchment areas tended to be smaller in size than the corresponding full-time areas for the same universities; and,

4. the high participation areas illustrated in the contour maps in Figures 4 to 21, for full-time students, tended, with the exception of Alberta universities, not to be located in the same vicinity where the high participation areas for the part-time students were located.

## IMPLICATIONS

Implications related to the findings and conclusions drawn are relevant to university administrators and university institutional researchers.

### University Administration

The contribution of this research to the administration of the nine universities in the study lies primarily in the six categories of descriptive information compiled. They were:

1. the documentation and evaluation of the relative success of the nine universities over distance with respect to student participation;

2. the identification and description of areas of interuniversity competition;

3. a preliminary documentation of the relationship between competition and participation;

4. the documentation and description of each university catchment area for interuniversity comparison;

5. the demonstration and documentation of major participation differences over distance between full-time and part-time students for each university; and,

6. the identification of one or more home area characteristics, out of a set of six for each university, which best account for the variations in new enrollee participation from different areas.

Descriptive information about the university and its relationship to prospective students and new enrollees such as compiled in this study is essential for the development of university marketing and institutional delivery strategies that are location specific.

### University Institutional Research

The information provided by this study can be used by any of the nine universities studied as bench-mark data for future research. Future studies can be conducted to assess the effectiveness of institutional changes which may be introduced to deliberately alter the participation rates in some way. Certainly, if enrollments continue to decline as forecast, the university is likely to derive some benefit from monitoring changes in participation rates for the various home areas within its catchment area.

Secondly, a base has been provided from which research hypotheses can be generated for research in higher education. Some obvious research areas extending directly from this study are discussed in detail in the next section.

Thirdly, the study has provided a set of meaningful predictors for participation at each university between May 1, 1976 and May 1, 1977. For some universities the predictors accounted for a greater proportion of the variation in participation than for others. However, this preliminary analysis has demonstrated the utility of examining community or home area measures.

Finally, an unobtrusive measures approach was taken to measure and evaluate university success related to participation, and innovative methods were employed to handle and process the massive quantities of descriptive data required for interuniversity comparisons on the basis of home area or community measures.

## RECOMMENDATIONS FOR FUTURE RESEARCH

This study was the first to perform a comparative analysis of nine public universities across four provinces by compiling the characteristics of individual catchment areas with data tied to student origins or home areas. Time and budget constraints prohibited the inclusion of all major postsecondary institutions in western Canada, while unanticipated technical difficulties related to the gathering of accurate data culminated in the deletion of two universities from the study. The year 1976 was selected because it represented a crucial period for universities whose enrollments were either declining in Arts and Science and Education or predicted to decline in the near future. A second reason for selecting 1976 as the time period for this study, was that it coincided with the mid-decade Canadian census. Unfortunately,

the 1976 census did not collect data related to average family income; thus, the average family income data were derived from the 1971 Canadian census.

Considering the above, and the findings of the study, several suggestions for future research are presented for consideration.

1. Future studies aimed at examining university participation should be designed in such a way as to include the influence of other postsecondary organizations competing for students. Therefore, natural and geographical clusters of universities should be selected for comparative analysis, as was done in this study. However, other major postsecondary institutions within the catchment areas of the universities selected for study should also be included.

By considering all of the universities and postsecondary institutions within a defined geographical area, the effects of competition and distance on university participation might be further examined in the context of an "intervening opportunities" model similar to that developed by Stouffer (1940:846) which proposed that:

> . . . the number of persons going a given distance is directly proportional to the number of opportunities at that distance and inversely proportional to the number of intervening opportunities.

H. McConnell (1965:31) attempted in a limited way but with promising results, to assess the effects of intervening opportunities on university enrollment for a single university.

With the procedures developed in this study for calculating distances, the consideration of numerous intervening opportunities should

not present a serious problem. Five characteristics of intervening postsecondary institutions which might be useful to examine are:

(a) the number of institutions new enrollees pass by to enroll at a particular university;

(b) the type of institutions passed by;

(c) the proximity of the institution to the students who pass it by to attend a university; and,

(d) the geographical position of the institution relative to both the students' home area and the receiving university.

2. This study concluded that "when there was interuniversity competition, the smaller the mean number of prospective students per CCS within the dominated area, the greater the tendency toward a higher participation rate for the area." This conclusion was based on moderate negative correlations with probabilities of being valid ranging from only 85 percent to 93 percent, between the mean number prospective students per CCS in a dominated area and the participation rate for the area. One explanation for the low probabilities associated with the correlations is simply the small number of cases and degree of freedom involved. Therefore, an hypothesis generated from the above evidence and worthy of future study, is thus stated: "In areas involving interuniversity competition:

(a) smaller communities have higher participation rates than larger communities;

(b) smaller communities have higher combined participation rates (rates of all competing universities together) than they would have had if there had not been competition; and,

(c) the competition effect described in (b) occurs to a greater degree in smaller communities than in larger communities."

3. A third recommendation for future research, and an extension of this study, would be a further development and refinement of the three categories describing the geographic configurations of interuniversity competition within a province--"isolation," "sprawl," and "containment"--which were created as a result of this study. Similar analyses of interuniversity competition within other provinces combined with an extended and focussed search for other characteristics of interuniversity competition within the provinces studied here should serve to further refine and perhaps expand the configurations into a generalizable model or taxonomy.

4. The fourth recommendation for further research emerging from this study would involve research designed to investigate the predictor anomalies reported earlier in the study.

The anomalies involved: (a) the direction of the relationship between average family income five years earlier and the University of Victoria full-time participation rates where the direction of the relationship was found to be positive while in all other instances the relationship proved to be negative and, (b) the direction of the relationship between the percentage of prospective students unemployed and the University of British Columbia part-time and full-time participation rates which was positive for both while the same relationship was negative between the only other two instances where the predictor was meaningful--for part-time participation rates at the

University of Regina and for full-time participation rates at the University of Alberta.

5. This study tested distance as the primary independent variable for investigation along with five secondary variables. Findings from this study suggested that two of the secondary variables--average family income five years earlier and the percentage of the population with prior university experience--were important predictors for full- and part-time university participation. The fifth and final recommendation for future research is that additional investigations be conducted to determine the relationship of average family income and the percentage of the population with prior university, to university participation. Future studies should be able to readily access average family income data drawn from the same time period as the participation rate data.

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# APPENDICES

# APPENDIX A

# CORRESPONDENCE

CENTRE FOR THE STUDY
OF POSTSECONDARY EDUCATION
FACULTY OF EDUCATION
THE UNIVERSITY OF ALBERTA

May 28, 1980

Dear

I am about to finalize the design for my doctoral research under the supervision of Professor A. Konrad at the University of Alberta, and I wish to include data from your university in the study. The purpose of the research is to examine geographic patterns of university enrolment in Western Canada and to investigate the influence of various institutional variables on those patterns.

Data required for the study include:

1. the geographic origins, in the form of initial permanent addresses, of Canadian undergraduates who registered at the university for the first time between May 1, 1976 and May 1, 1977;
2. data related to the provision of credit course information to prospective students between May 1, 1976 and May 1, 1977; (ie. course calendars, advertising, etc.);
3. information related to the location of and participation in non-credit programs sponsored by the university between May 1, 1975 and May 1, 1977.

Thus, the information requested would appear not to be of a sensitive or confidential nature. To facilitate the above, I plan to visit your university at least once during the next six months to meet with some of the faculty and administration.

Please consider this as a formal letter of request for access to the above data. Naturally, your institution will be sent a report of the research findings and conclusions upon completion of the study. I am looking forward to hearing from you on this matter.

Sincerely,

Roy M.K. Wagner

7-133B, EDUCATION NORTH, EDMONTON, ALBERTA, CANADA • T6G 2G5 • TELEPHONE (403) 432-2217

October 27, 1980

Hopefully, by now the dust from your Fall registration will have settled somewhat. At this time I would like to pursue our earlier correspondence and conversations regarding enrolment data from your university which I am hoping to incorporate into my doctoral research with the University of Alberta. As a reminder, the information I am looking for was described in my May 28th letter as "the geographic origins, in the form of initial permanent addresses of Canadian undergraduates who registered at the university for the first time between May 1, 1976 and May 1, 1977." In particular I am looking at data on Arts, Science and Education students for that period.

Since our last contact, the nature of my request has been further refined to make it easier both for you and us. In essence, I would like to obtain the data on tape in its raw state without any aggregation. Thus sampling, etc. can be performed at this end as the need arises. For obvious reasons, we would also like to have the name and phone number of the programmer involved in preparing the data tape. The format for the data which would be most suitable for our purposes, is outlined in the attached document. If you wish, the data will be destroyed (or returned to you) after it has been analyzed.

If you have any questions, please phone me at (403) 433-3050 or at the number on the letterhead above and I will return your call. If your questions are of a technical nature, you may wish to call our research consultant: Craig Montgomerie, Department of Educational Research, at (403) 436-2628.

I am looking forward to hearing from you on this matter. Thank you for your assistance.

Sincerely,

Roy M.K. Wagner

## RECOMMENDED FORMAT FOR ENROLMENT DATA

The information required and the format recommended for the information, are as follows:

| cols. (inclusive) | item(s) coded |
|---|---|
| 1 to 10 . . . . . . . . | Student Identification Number |
| (see Note #1) below | - "students" include all new registrants who between May 1, 1976 and May 1, 1977, registered at your university;<br>- ideally, the students will include undergraduates for the faculties of Arts, Science and Education. (However, if this separation is difficult to do, please include a more comprehensive group with coding so that undergraduates in Arts, Science and Education can be separated out by the researcher.); |
| 11 to 15 . . . . . . . . | Code for Faculty at time of registration |
| | - (again, ideally, only Arts, Science, and Education should be involved, but if you prefer, put in all and code for faculty to permit us to separate them.) |
| 16 to 35 . . . . . . . . | Student's First Permanent Address |
| | - when application for admission was made;<br>- code for the closest community; |
| 36 to 55 . . . . . . . . | Last Educational Institution Attended |
| (36 to 40) . . . . . . . | - identification of institution (name code) |
| (41 to 50) . . . . . . . | - location of institution if accessible (code for closest community) |
| (51 to 55) . . . . . . . | - year of institution attended (most recent) |
| 56 to 70 . . . . . . . . | Student Status |
| (56 to 60) . . . . . . . | - part or full-time status; (coded); |
| (61 to 65) . . . . . . . | - coded for Canadian or Foreign visa; |
| (66 to 70) . . . . . . . | - coded for year of program of new registrant. (i.e. 1st, 2nd, 3rd or 4th). This assumes that new registrants in years 2 to 4 of their program were "transfer" students from other colleges or universities.) |

Note #1:

When information re: a particular student is incomplete, please provide the student's identification along with whatever appropriate information is accessible. For example, a student from out of your province may only have his or her home province listed in lieu of a permanent address and/or in lieu of the last institution attended. Where such information is not available or accessible, it may have to be collected manually in a follow-up search of the "Application for Admission" files, conducted by the researcher. Obviously, this should be avoided whenever possible.

Note #2:

In some instances, the student's first permanent address will not be accessible due to an updating of the address by the student in subsequent years. In such an instance, please provide whatever permanent address is available for the student. However, if up-dated permanent addresses are provided, it is essential that:

a) you identify it as such in accompanying correspondence, so that the data can be treated appropriately in the subsequent analysis; and,

b) you provide data for cols. 36 to 55 related to the last institution attended.

Note #3: . . . . Technical Restrictions

Preferably, the data should be on a nine-track tape with standard IBM OS labelled format (800 BPI, 1600 BPI, or 6250 BPI). If for some reason the latter is not possible, any other form will do, but please specify the format used and blocking.

Note #4:

Please include a key for all coded information. In addition, please right justify all coded information.

Note #5:

Could you please lend me one of your tapes until we are able to copy the data and return it to you? If not, please let me know so that other arrangments can be made.

11149 81st Ave
EDMONTON, Alberta
T6G 0S6
May 21, 1981

Mr. Peter Haney
Institutional Research Officer
University of Lethbridge
4401 University Drive
Lethbridge, Alberta
T1K 3M4

Dear Peter,

As you are no doubt aware, I received the data I was looking for and have since returned the tape to your computing service department. Thank you very much for your help.

You may or may not recall my concern that the addresses obtained for the study be the initial address used by the student when he or she first applied or if necessary, registered at the University of Lethbridge between May 1, 1976 and May 1, 1977. Unfortunately, this was not always possible, as in the case of Lethbridge.

Since your data involved up-dated permanent addresses, I require a little more information before wrapping up the study. I need a manual check of sixty student identifications randomly sampled and marked on the attached listing. The manual check will likely involve someone taking the marked identification and locating it in the application for admission files or first-time registration files, and writing down the address used by the student at that time. Thus, I will be able to calculate the error built in to the data used for the study due to address up-dating.

After the search is completed could you please copy the document (in case it is lost on the way back) and mail it to me by special delivery as soon as possible.

Thank you again for your assistance.

Sincerely,

Roy M.K. Wagner

11149 81st Ave
Edmonton, Alberta
T6G )S6
May 21, 1981

Mr. J.B. Salt
Director of Student Records
Office of the Registrar
University of Manitoba
Winnipeg, Manitoba
R3T 2H2

Dear Mr. Salt,

I have been conducting (with the assistance of T. Lussier, from the office of institutional research) a study which employs U. of M. data. Since a number of the addresses or postal codes have been updated since the students' first registration at the U. of M., before I proceed further, I have to check to determine the size of error involved in the address up-date. Thelma Lussier has informed me that your office has agreed to provide the initial addresses and or postal codes for 60 students.

The only stipulation is that the addresses must be the addresses used by the students when they first applied for admission to the U.of M. or if necessary, when they first registered at the U. of M. Mrs. Lussier has mentioned to me that some of the information may not be available due to the university policy of destroying files dormant for three years. Therefore, I have on the accompanying document, marked on the left hand side of each col., 200 randomly sampled student identifications. (who registered between May 1, 1976 and May 1, 1977).

Therefore, could you please:

1. pick every third marked identification;
2. record the postal code and or address upon first registration or application for admission;
3. copy (in case of loss) and mail it to me by special delivery, as quickly as possible.

Note: if some of the marked identifications cannot be located, a second run through the list may be necessary, again picking every third id. marked until 60 have been recorded.

Thank you for your assistance. I am looking forward to hearing from you.

Sincerely,

Roy M.K. Wagner

c.c. T. Lussier

The University of Manitoba
Student Records Office
Winnipeg, Manitoba
Canada R3T 2N2

May 28, 1981

Mr. Roy M. K. Wagner
11149 81st Avenue
Edmonton, Alberta
T6G 1S6

Dear Mr. Wagner:

In compliance with your request in your letter dated May 21, 1981, I am enclosing approximately 199 names and addresses of the students who were marked off on your list.

I trust the enclosed information is satisfactory for your purpose.

Yours sincerely,

J. B. Salt

J. B. Salt
Director, Student Records

JBS/jk

Encs

cc T. Lussier

# APPENDIX B

# SHARED CCS AREAS WITHIN PROVINCES AND THEIR PARTICIPATION RATES

## FULL-TIME STUDENT PARTICIPATION RATES IN BRITISH COLUMBIA SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2765 | 5880 | 42 | 0.714 | 29 | 0.493 |
| 2766 | 2180 | 5 | 0.229 | 4 | 0.183 |
| 2768 | 975 | 1 | 0.103 | 4 | 0.410 |
| 2778 | 7485 | 11 | 0.147 | 39 | 0.521 |
| 2782 | 17565 | 6 | 0.034 | 66 | 0.376 |
| 2784 | 2645 | 4 | 0.151 | 4 | 0.151 |
| 2785 | 4610 | 12 | 0.260 | 13 | 0.282 |
| 2786 | 1620 | 1 | 0.062 | 4 | 0.247 |
| 2789 | 11715 | 38 | 0.324 | 46 | 0.393 |
| 2792 | 955 | 1 | 0.105 | 5 | 0.524 |
| 2793 | 1695 | 4 | 0.236 | 1 | 0.059 |
| 2797 | 405 | 2 | 0.494 | 1 | 0.247 |
| 2799 | 6255 | 50 | 0.799 | 26 | 0.416 |
| 2801 | 8945 | 77 | 0.861 | 41 | 0.458 |
| 2805 | 10730 | 5 | 0.047 | 21 | 0.196 |
| 2807 | 910 | 5 | 0.549 | 2 | 0.220 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA F | UNIVERSITY OF VICTORIA % | UNIVERSITY OF B.C. F | UNIVERSITY OF B.C. % |
|---|---|---|---|---|---|
| 2808 | 5115 | 22 | 0.430 | 31 | 0.606 |
| 2810 | 7190 | 7 | 0.097 | 28 | 0.389 |
| 2827 | 268555 | 84 | 0.031 | 2136 | 0.795 |
| 2832 | 460 | 1 | 0.217 | 1 | 0.217 |
| 2834 | 4865 | 23 | 0.473 | 32 | 0.658 |
| 2839 | 10920 | 42 | 0.385 | 34 | 0.311 |
| 2840 | 2830 | 11 | 0.389 | 12 | 0.424 |
| 2842 | 1080 | 3 | 0.278 | 3 | 0.278 |
| 2847 | 2120 | 4 | 0.189 | 47 | 2.217 |
| 2848 | 845 | 2 | 0.237 | 2 | 0.237 |
| 2851 | 3385 | 4 | 0.118 | 2 | 0.059 |
| 2854 | 2890 | 15 | 0.519 | 16 | 0.554 |
| 2861 | 13445 | 21 | 0.156 | 40 | 0.298 |
| 2862 | 1315 | 5 | 0.380 | 7 | 0.532 |
| 2863 | 1145 | 1 | 0.087 | 6 | 0.524 |
| 2864 | 590 | 2 | 0.339 | 1 | 0.169 |
| 3090 | 50460 | 755 | 1.496 | 66 | 0.131 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 3091 | 2385 | 3 | 0.126 | 8 | 0.335 |
| 3092 | 2770 | 3 | 0.108 | 1 | 0.036 |
| 3093 | 3580 | 9 | 0.251 | 9 | 0.251 |
| 3094 | 5245 | 26 | 0.496 | 18 | 0.343 |
| 3095 | 2450 | 1 | 0.041 | 15 | 0.612 |
| 3097 | 14230 | 30 | 0.211 | 41 | 0.288 |
| 3100 | 5780 | 12 | 0.208 | 35 | 0.606 |
| 3102 | 2135 | 1 | 0.047 | 7 | 0.328 |
| 3103 | 7005 | 10 | 0.143 | 17 | 0.243 |
| 3104 | 7240 | 16 | 0.221 | 4 | 0.055 |
| 3105 | 3775 | 13 | 0.344 | 1 | 0.026 |
| 3106 | 2105 | 3 | 0.143 | 1 | 0.048 |

## FULL-TIME STUDENT PARTICIPATION RATES IN ALBERTA SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | |
|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % |
| 2685 | 6930 | 0 | 0.0 | 10 | 0.144 | 16 | 0.231 |
| 2687 | 930 | 6 | 0.645 | 1 | 0.108 | 3 | 0.323 |
| 2689 | 2130 | 23 | 1.080 | 7 | 0.329 | 1 | 0.047 |
| 2690 | 2460 | 6 | 0.244 | 12 | 0.488 | 7 | 0.285 |
| 2691 | 1325 | 10 | 0.755 | 2 | 0.151 | 7 | 0.528 |
| 2692 | 12910 | 183 | 1.418 | 8 | 0.062 | 40 | 0.310 |
| 2693 | 1585 | 21 | 1.325 | 0 | 0.0 | 12 | 0.757 |
| 2694 | 1310 | 10 | 0.763 | 2 | 0.153 | 1 | 0.076 |
| 2695 | 2475 | 14 | 0.566 | 8 | 0.323 | 1 | 0.040 |
| 2697 | 815 | 0 | 0.0 | 7 | 0.859 | 5 | 0.613 |
| 2700 | 1170 | 0 | 0.0 | 7 | 0.598 | 6 | 0.513 |
| 2702 | 2150 | 1 | 0.047 | 1 | 0.047 | 2 | 0.093 |
| 2703 | 1365 | 6 | 0.440 | 2 | 0.147 | 1 | 0.073 |
| 2704 | 1535 | 0 | 0.0 | 10 | 0.651 | 2 | 0.130 |
| 2705 | 109050 | 25 | 0.023 | 1256 | 1.152 | 178 | 0.163 |
| 2706 | 3475 | 3 | 0.086 | 12 | 0.345 | 3 | 0.086 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | |
|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % |
| 2707 | 3940 | 1 | 0.025 | 1 | 0.025 | 1 | 0.025 |
| 2708 | 3090 | 1 | 0.032 | 7 | 0.227 | 6 | 0.194 |
| 2710 | 1495 | 0 | 0.0 | 1 | 0.067 | 6 | 0.401 |
| 2711 | 1880 | 1 | 0.053 | 8 | 0.426 | 3 | 0.160 |
| 2712 | 895 | 0 | 0.0 | 1 | 0.112 | 5 | 0.559 |
| 2716 | 2075 | 0 | 0.0 | 3 | 0.145 | 9 | 0.434 |
| 2717 | 2705 | 0 | 0.0 | 3 | 0.111 | 15 | 0.555 |
| 2718 | 10710 | 1 | 0.009 | 15 | 0.140 | 48 | 0.448 |
| 2719 | 1120 | 1 | 0.089 | 2 | 0.179 | 3 | 0.268 |
| 2723 | 975 | 0 | 0.0 | 9 | 0.923 | 2 | 0.205 |
| 2728 | 3390 | 1 | 0.029 | 2 | 0.059 | 23 | 0.678 |
| 2729 | 2960 | 0 | 0.0 | 1 | 0.034 | 17 | 0.574 |
| 2733 | 103345 | 10 | 0.010 | 15 | 0.015 | 1566 | 1.515 |
| 2735 | 2625 | 0 | 0.0 | 8 | 0.305 | 20 | 0.762 |
| 2738 | 6315 | 1 | 0.016 | 0 | 0.0 | 22 | 0.348 |
| 2739 | 4450 | 2 | 0.045 | 0 | 0.0 | 15 | 0.337 |
| 2740 | 2875 | 2 | 0.070 | 1 | 0.035 | 12 | 0.417 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE |  | UNIVERSITY OF CALGARY |  | UNIVERSITY OF ALBERTA |  |
|---|---|---|---|---|---|---|---|
|  |  | F | % | F | % | F | % |
| 2747 | 765 | 0 | 0.0 | 1 | 0.131 | 15 | 1.961 |
| 2748 | 1125 | 0 | 0.0 | 1 | 0.089 | 15 | 1.333 |
| 2749 | 990 | 0 | 0.0 | 1 | 0.101 | 18 | 1.818 |
| 2764 | 5690 | 2 | 0.035 | 2 | 0.035 | 38 | 0.668 |
| 3087 | 1810 | 0 | 0.0 | 3 | 0.166 | 2 | 0.110 |
| 3089 | 3730 | 1 | 0.027 | 3 | 0.080 | 17 | 0.456 |

## FULL-TIME STUDENT PARTICIPATION RATES IN SASKATCHEWAN SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN F | UNIVERSITY OF SASKATCHEWAN % | UNIVERSITY OF REGINA F | UNIVERSITY OF REGINA % |
|---|---|---|---|---|---|
| 2361 | 115 | 2 | 1.739 | 1 | 0.870 |
| 2364 | 215 | 1 | 0.465 | 2 | 0.930 |
| 2365 | 1770 | 11 | 0.621 | 8 | 0.452 |
| 2367 | 90 | 1 | 1.111 | 1 | 1.111 |
| 2369 | 160 | 1 | 0.625 | 3 | 1.875 |
| 2371 | 175 | 3 | 1.714 | 3 | 1.714 |
| 2372 | 305 | 2 | 0.656 | 3 | 0.984 |
| 2377 | 200 | 3 | 1.500 | 1 | 0.500 |
| 2380 | 100 | 1 | 1.000 | 1 | 1.000 |
| 2385 | 230 | 1 | 0.435 | 2 | 0.870 |
| 2391 | 1865 | 13 | 0.697 | 3 | 0.161 |
| 2394 | 135 | 1 | 0.741 | 1 | 0.741 |
| 2398 | 165 | 1 | 0.606 | 2 | 1.212 |
| 2403 | 155 | 2 | 1.290 | 1 | 0.645 |
| 2409 | 545 | 5 | 0.917 | 6 | 1.101 |
| 2410 | 170 | 1 | 0.588 | 1 | 0.588 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN F | UNIVERSITY OF SASKATCHEWAN % | UNIVERSITY OF REGINA F | UNIVERSITY OF REGINA % |
|---|---|---|---|---|---|
| 2417 | 305 | 4 | 1.311 | 3 | 0.984 |
| 2434 | 485 | 5 | 1.031 | 3 | 0.619 |
| 2438 | 160 | 1 | 0.625 | 2 | 1.250 |
| 2440 | 165 | 2 | 1.212 | 1 | 0.606 |
| 2441 | 230 | 4 | 1.739 | 1 | 0.435 |
| 2450 | 890 | 14 | 1.573 | 5 | 0.562 |
| 2452 | 95 | 1 | 1.053 | 4 | 4.211 |
| 2457 | 430 | 2 | 0.465 | 1 | 0.233 |
| 2458 | 300 | 1 | 0.333 | 4 | 1.333 |
| 2460 | 29020 | 75 | 0.258 | 555 | 1.912 |
| 2463 | 465 | 2 | 0.430 | 5 | 1.075 |
| 2464 | 480 | 1 | 0.208 | 2 | 0.417 |
| 2467 | 125 | 1 | 0.800 | 1 | 0.800 |
| 2470 | 195 | 4 | 2.051 | 1 | 0.513 |
| 2478 | 5930 | 47 | 0.793 | 30 | 0.506 |
| 2480 | 115 | 1 | 0.870 | 1 | 0.870 |
| 2483 | 230 | 4 | 1.739 | 1 | 0.435 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2494 | 2765 | 42 | 1.519 | 6 | 0.217 |
| 2517 | 2715 | 38 | 1.400 | 4 | 0.147 |
| 2521 | 365 | 6 | 1.644 | 1 | 0.274 |
| 2532 | 200 | 1 | 0.500 | 1 | 0.500 |
| 2537 | 60 | 4 | 6.667 | 1 | 1.667 |
| 2540 | 100 | 3 | 3.000 | 3 | 3.000 |
| 2541 | 335 | 5 | 1.493 | 1 | 0.299 |
| 2549 | 200 | 5 | 2.500 | 1 | 0.500 |
| 2577 | 520 | 3 | 0.577 | 1 | 0.192 |
| 2596 | 165 | 3 | 1.818 | 1 | 0.606 |
| 2614 | 540 | 9 | 1.667 | 2 | 0.370 |
| 2615 | 1185 | 20 | 1.688 | 1 | 0.084 |
| 2622 | 545 | 4 | 0.734 | 2 | 0.367 |
| 2626 | 665 | 21 | 3.158 | 3 | 0.451 |
| 2627 | 270 | 5 | 1.852 | 1 | 0.370 |
| 2641 | 5195 | 75 | 1.444 | 2 | 0.038 |
| 2653 | 2425 | 38 | 1.567 | 2 | 0.082 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN |  | UNIVERSITY OF REGINA |  |
|---|---|---|---|---|---|
|  |  | F | % | F | % |
| 2671 | 265 | 5 | 1.887 | 1 | 0.377 |
| 3072 | 205 | 1 | 0.488 | 2 | 0.976 |
| 3075 | 135 | 1 | 0.741 | 1 | 0.741 |
| 3079 | 27730 | 651 | 2.348 | 5 | 0.018 |

## FULL-TIME STUDENT PARTICIPATION RATES IN MANITOBA SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY F | BRANDON UNIVERSITY % | UNIVERSITY OF MANITOBA F | UNIVERSITY OF MANITOBA % |
|---|---|---|---|---|---|
| 2207 | 1330 | 1 | 0.075 | 17 | 1.278 |
| 2209 | 570 | 1 | 0.175 | 3 | 0.526 |
| 2212 | 605 | 2 | 0.331 | 3 | 0.496 |
| 2220 | 290 | 4 | 1.379 | 1 | 0.345 |
| 2223 | 120 | 1 | 0.833 | 1 | 0.833 |
| 2228 | 290 | 1 | 0.345 | 2 | 0.690 |
| 2232 | 405 | 1 | 0.247 | 1 | 0.247 |
| 2238 | 930 | 1 | 0.108 | 6 | 0.645 |
| 2242 | 2870 | 11 | 0.383 | 12 | 0.418 |
| 2243 | 7095 | 74 | 1.043 | 7 | 0.099 |
| 2244 | 615 | 4 | 0.650 | 2 | 0.325 |
| 2245 | 200 | 2 | 1.000 | 1 | 0.500 |
| 2247 | 340 | 2 | 0.588 | 2 | 0.588 |
| 2249 | 225 | 1 | 0.444 | 2 | 0.889 |
| 2258 | 1155 | 3 | 0.260 | 2 | 0.173 |
| 2264 | 130 | 1 | 0.769 | 1 | 0.769 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY F | BRANDON UNIVERSITY % | UNIVERSITY OF MANITOBA F | UNIVERSITY OF MANITOBA % |
|---|---|---|---|---|---|
| 2266 | 605 | 2 | 0.331 | 1 | 0.165 |
| 2269 | 325 | 2 | 0.615 | 4 | 1.231 |
| 2271 | 125 | 2 | 1.600 | 1 | 0.800 |
| 2284 | 265 | 1 | 0.377 | 2 | 0.755 |
| 2297 | 100 | 1 | 1.000 | 1 | 1.000 |
| 2325 | 1745 | 4 | 0.229 | 6 | 0.344 |
| 2327 | 235 | 1 | 0.426 | 1 | 0.426 |
| 2330 | 135 | 2 | 1.481 | 1 | 0.741 |
| 2332 | 55 | 2 | 3.636 | 1 | 1.818 |
| 2339 | 325 | 1 | 0.308 | 2 | 0.615 |
| 2343 | 90 | 1 | 1.111 | 2 | 2.222 |
| 2897 | 1970 | 4 | 0.203 | 1 | 0.051 |
| 2904 | 3475 | 1 | 0.029 | 24 | 0.691 |
| 2950 | 99650 | 17 | 0.017 | 1049 | 1.053 |
| 2962 | 255 | 1 | 0.392 | 2 | 0.784 |

PART-TIME STUDENT PARTICIPATION RATES IN BRITISH COLUMBIA SHARED CCS AREAS
FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2765 | 5880 | 11 | 0.187 | 5 | 0.085 |
| 2778 | 7485 | 1 | 0.013 | 20 | 0.267 |
| 2784 | 2645 | 1 | 0.038 | 6 | 0.227 |
| 2789 | 11715 | 1 | 0.009 | 9 | 0.077 |
| 2799 | 6255 | 10 | 0.160 | 3 | 0.048 |
| 2801 | 8945 | 22 | 0.246 | 4 | 0.045 |
| 2805 | 10730 | 2 | 0.019 | 4 | 0.037 |
| 2808 | 5115 | 2 | 0.039 | 7 | 0.137 |
| 2810 | 7190 | 1 | 0.014 | 13 | 0.181 |
| 2827 | 268555 | 22 | 0.008 | 550 | 0.205 |
| 2834 | 4865 | 2 | 0.041 | 6 | 0.123 |
| 2839 | 10920 | 18 | 0.165 | 13 | 0.119 |
| 2840 | 2830 | 6 | 0.212 | 1 | 0.035 |
| 2847 | 2120 | 2 | 0.094 | 10 | 0.472 |
| 2854 | 2890 | 1 | 0.035 | 4 | 0.138 |
| 2861 | 13445 | 2 | 0.015 | 17 | 0.126 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2864 | 590 | 2 | 0.339 | 1 | 0.169 |
| 3090 | 50460 | 280 | 0.555 | 27 | 0.054 |
| 3093 | 3580 | 2 | 0.056 | 2 | 0.056 |
| 3094 | 5245 | 4 | 0.076 | 3 | 0.057 |
| 3095 | 2450 | 1 | 0.041 | 3 | 0.122 |
| 3096 | 1140 | 1 | 0.088 | 1 | 0.088 |
| 3097 | 14230 | 4 | 0.028 | 17 | 0.119 |
| 3100 | 5780 | 1 | 0.017 | 5 | 0.087 |
| 3102 | 2135 | 1 | 0.047 | 1 | 0.047 |
| 3104 | 7240 | 2 | 0.028 | 2 | 0.028 |

PART-TIME STUDENT PARTICIPATION RATES IN ALBERTA SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | |
|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % |
| 2685 | 6930 | 3 | 0.043 | 0 | 0.0 | 1 | 0.014 |
| 2687 | 930 | 4 | 0.430 | 0 | 0.0 | 1 | 0.108 |
| 2692 | 12910 | 61 | 0.473 | 0 | 0.0 | 1 | 0.008 |
| 2694 | 1310 | 1 | 0.076 | 1 | 0.076 | 0 | 0.0 |
| 2703 | 1365 | 2 | 0.147 | 1 | 0.073 | 0 | 0.0 |
| 2704 | 1535 | 3 | 0.195 | 0 | 0.0 | 1 | 0.065 |
| 2705 | 109050 | 4 | 0.004 | 252 | 0.231 | 21 | 0.019 |
| 2708 | 3090 | 1 | 0.032 | 2 | 0.065 | 0 | 0.0 |
| 2712 | 895 | 0 | 0.0 | 1 | 0.112 | 1 | 0.112 |
| 2718 | 10710 | 1 | 0.009 | 0 | 0.0 | 12 | 0.112 |
| 2729 | 2960 | 0 | 0.0 | 1 | 0.034 | 5 | 0.169 |
| 2733 | 103345 | 1 | 0.001 | 4 | 0.004 | 384 | 0.372 |
| 3089 | 3730 | 1 | 0.027 | 0 | 0.0 | 8 | 0.214 |

PART-TIME STUDENT PARTICIPATION RATES IN SASKATCHEWAN SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN F | UNIVERSITY OF SASKATCHEWAN % | UNIVERSITY OF REGINA F | UNIVERSITY OF REGINA % |
|---|---|---|---|---|---|
| 2365 | 1770 | 2 | 0.113 | 3 | 0.169 |
| 2391 | 1865 | 2 | 0.107 | 2 | 0.107 |
| 2409 | 545 | 1 | 0.183 | 1 | 0.183 |
| 2416 | 110 | 1 | 0.909 | 1 | 0.909 |
| 2426 | 375 | 3 | 0.800 | 1 | 0.267 |
| 2439 | 185 | 1 | 0.541 | 1 | 0.541 |
| 2445 | 560 | 2 | 0.357 | 1 | 0.179 |
| 2446 | 145 | 1 | 0.690 | 1 | 0.690 |
| 2450 | 890 | 2 | 0.225 | 2 | 0.225 |
| 2460 | 29020 | 11 | 0.038 | 121 | 0.417 |
| 2462 | 270 | 1 | 0.370 | 1 | 0.370 |
| 2463 | 465 | 1 | 0.215 | 2 | 0.430 |
| 2478 | 5930 | 7 | 0.118 | 21 | 0.354 |
| 2484 | 150 | 1 | 0.667 | 1 | 0.667 |
| 2521 | 365 | 4 | 1.096 | 1 | 0.274 |
| 2538 | 160 | 2 | 1.250 | 3 | 1.875 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2620 | 825 | 3 | 0.364 | 1 | 0.121 |
| 3072 | 205 | 1 | 0.488 | 1 | 0.488 |
| 3079 | 27730 | 257 | 0.927 | 2 | 0.007 |

## PART-TIME STUDENT PARTICIPATION RATES IN MANITOBA SHARED CCS AREAS FOR UNIVERSITIES WITHIN THE PROVINCE

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY F | BRANDON UNIVERSITY % | UNIVERSITY OF MANITOBA F | UNIVERSITY OF MANITOBA % |
|---|---|---|---|---|---|
| 2212 | 605 | 1 | 0.165 | 3 | 0.496 |
| 2215 | 590 | 2 | 0.339 | 2 | 0.339 |
| 2236 | 2610 | 1 | 0.038 | 10 | 0.383 |
| 2240 | 330 | 1 | 0.303 | 1 | 0.303 |
| 2242 | 2870 | 1 | 0.035 | 19 | 0.662 |
| 2243 | 7095 | 30 | 0.423 | 6 | 0.085 |
| 2247 | 340 | 2 | 0.588 | 1 | 0.294 |
| 2248 | 385 | 2 | 0.519 | 1 | 0.260 |
| 2258 | 1155 | 1 | 0.087 | 4 | 0.346 |
| 2266 | 605 | 4 | 0.661 | 5 | 0.826 |
| 2268 | 160 | 1 | 0.625 | 1 | 0.625 |
| 2269 | 325 | 2 | 0.615 | 1 | 0.308 |
| 2289 | 285 | 1 | 0.351 | 1 | 0.351 |
| 2293 | 375 | 3 | 0.800 | 3 | 0.800 |
| 2302 | 955 | 1 | 0.105 | 4 | 0.419 |
| 2325 | 1745 | 3 | 0.172 | 4 | 0.229 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY |  | UNIVERSITY OF MANITOBA |  |
|---|---|---|---|---|---|
|  |  | F | % | F | % |
| 2330 | 135 | 7 | 5.185 | 1 | 0.741 |
| 2897 | 1970 | 1 | 0.051 | 4 | 0.203 |
| 2904 | 3475 | 2 | 0.058 | 26 | 0.748 |
| 2907 | 3475 | 2 | 0.058 | 4 | 0.115 |
| 2950 | 99650 | 6 | 0.006 | 649 | 0.651 |
| 2962 | 255 | 1 | 0.392 | 3 | 1.176 |

# APPENDIX C

# PARTICIPATION RATES RELATED TO STUDENTS MIGRATING TO ADJACENT PROVINCES

## FULL-TIME STUDENT PARTICIPATION RATES IN BRITISH COLUMBIA CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE F | % | UNIVERSITY OF CALGARY F | % | UNIVERSITY OF ALBERTA F | % |
|---|---|---|---|---|---|---|---|
| 2772 | 2895 | 0 | 0.0 | 0 | 0.0 | 1 | 0.035 |
| 2778 | 7485 | 0 | 0.0 | 1 | 0.013 | 2 | 0.027 |
| 2782 | 17565 | 0 | 0.0 | 2 | 0.011 | 0 | 0.0 |
| 2785 | 4610 | 1 | 0.022 | 3 | 0.065 | 1 | 0.022 |
| 2786 | 1620 | 7 | 0.432 | 3 | 0.185 | 0 | 0.0 |
| 2789 | 11715 | 0 | 0.0 | 4 | 0.034 | 2 | 0.017 |
| 2792 | 955 | 0 | 0.0 | 1 | 0.105 | 1 | 0.105 |
| 2793 | 1695 | 0 | 0.0 | 3 | 0.177 | 0 | 0.0 |
| 2799 | 6255 | 0 | 0.0 | 0 | 0.0 | 2 | 0.032 |
| 2801 | 5795 | 0 | 0.0 | 1 | 0.017 | 2 | 0.035 |
| 2808 | 5115 | 3 | 0.059 | 4 | 0.078 | 6 | 0.117 |
| 2827 | 268555 | 3 | 0.001 | 3 | 0.001 | 14 | 0.005 |
| 2834 | 4865 | 0 | 0.0 | 4 | 0.082 | 1 | 0.021 |
| 2835 | 1560 | 0 | 0.0 | 2 | 0.128 | 0 | 0.0 |
| 2839 | 10920 | 0 | 0.0 | 2 | 0.018 | 1 | 0.009 |
| 2847 | 2120 | 0 | 0.0 | 0 | 0.0 | 1 | 0.047 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE F | UNIVERSITY OF LETHBRIDGE % | UNIVERSITY OF CALGARY F | UNIVERSITY OF CALGARY % | UNIVERSITY OF ALBERTA F | UNIVERSITY OF ALBERTA % |
|---|---|---|---|---|---|---|---|
| 2850 | 3580 | 0 | 0.0 | 1 | 0.028 | 9 | 0.251 |
| 2851 | 3385 | 0 | 0.0 | 0 | 0.0 | 1 | 0.030 |
| 2861 | 13445 | 0 | 0.0 | 2 | 0.015 | 2 | 0.015 |
| 2864 | 590 | 0 | 0.0 | 1 | 0.169 | 0 | 0.0 |
| 3090 | 28770 | 1 | 0.003 | 5 | 0.017 | 13 | 0.045 |
| 3091 | 2385 | 0 | 0.0 | 1 | 0.042 | 3 | 0.126 |
| 3093 | 3580 | 0 | 0.0 | 0 | 0.0 | 1 | 0.028 |
| 3094 | 5245 | 2 | 0.038 | 0 | 0.0 | 0 | 0.0 |
| 3095 | 2450 | 4 | 0.163 | 3 | 0.122 | 0 | 0.0 |
| 3097 | 14230 | 0 | 0.0 | 1 | 0.007 | 7 | 0.049 |
| 3103 | 7005 | 0 | 0.0 | 2 | 0.029 | 2 | 0.029 |
| 3104 | 7240 | 0 | 0.0 | 0 | 0.0 | 1 | 0.014 |
| 3105 | 3775 | 0 | 0.0 | 0 | 0.0 | 1 | 0.026 |

PART-TIME STUDENT PARTICIPATION RATES IN BRITISH COLUMBIA CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | |
|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % |
| 2772 | 2895 | 0 | 0.0 | 0 | 0.0 | 1 | 0.035 |
| 2785 | 4610 | 0 | 0.0 | 0 | 0.0 | 1 | 0.022 |
| 2799 | 6255 | 0 | 0.0 | 0 | 0.0 | 2 | 0.032 |
| 2805 | 10730 | 1 | 0.009 | 0 | 0.0 | 0 | 0.0 |
| 2810 | 7190 | 0 | 0.0 | 0 | 0.0 | 1 | 0.014 |
| 2827 | 268555 | 0 | 0.0 | 0 | 0.0 | 3 | 0.001 |
| 2839 | 10920 | 1 | 0.009 | 0 | 0.0 | 0 | 0.0 |
| 2861 | 13445 | 0 | 0.0 | 0 | 0.0 | 2 | 0.015 |
| 3090 | 53115 | 0 | 0.0 | 1 | 0.002 | 1 | 0.002 |
| 3100 | 5780 | 0 | 0.0 | 0 | 0.0 | 1 | 0.017 |
| 3104 | 7240 | 0 | 0.0 | 0 | 0.0 | 1 | 0.014 |

# FULL-TIME STUDENT PARTICIPATION RATES IN ALBERTA CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % | F | % |
| 2685 | 6930 | 2 | 0.029 | 0 | 0.0 | 2 | 0.029 | 1 | 0.014 |
| 2692 | 12910 | 1 | 0.008 | 2 | 0.015 | 1 | 0.008 | 0 | 0.0 |
| 2705 | 109050 | 24 | 0.022 | 27 | 0.025 | 26 | 0.024 | 1 | 0.001 |
| 2707 | 3940 | 0 | 0.0 | 1 | 0.025 | 0 | 0.0 | 0 | 0.0 |
| 2717 | 2705 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.037 |
| 2718 | 10710 | 2 | 0.019 | 1 | 0.009 | 0 | 0.0 | 0 | 0.0 |
| 2723 | 975 | 1 | 0.103 | 1 | 0.103 | 0 | 0.0 | 0 | 0.0 |
| 2728 | 3390 | 1 | 0.029 | 0 | 0.0 | 1 | 0.029 | 0 | 0.0 |
| 2729 | 2960 | 0 | 0.0 | 0 | 0.0 | 8 | 0.270 | 0 | 0.0 |
| 2730 | 1525 | 0 | 0.0 | 0 | 0.0 | 1 | 0.066 | 0 | 0.0 |
| 2733 | 103345 | 8 | 0.008 | 9 | 0.009 | 6 | 0.006 | 1 | 0.001 |
| 2735 | 2625 | 0 | 0.0 | 0 | 0.0 | 1 | 0.038 | 0 | 0.0 |
| 2740 | 2875 | 1 | 0.035 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2751 | 3085 | 1 | 0.032 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2753 | 2010 | 0 | 0.0 | 1 | 0.050 | 0 | 0.0 | 0 | 0.0 |
| 2758 | 505 | 0 | 0.0 | 0 | 0.0 | 1 | 0.198 | 0 | 0.0 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA |  | UNIVERSITY OF B.C. |  | UNIVERSITY OF SASKATCHEWAN |  | UNIVERSITY OF REGINA |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | F | % | F | % | F | % | F | % |
| 2763 | 630 | 1 | 0.159 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2764 | 5690 | 2 | 0.035 | 0 | 0.0 | 2 | 0.035 | 0 | 0.0 |
| 3088 | 1010 | 1 | 0.099 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 3089 | 3730 | 1 | 0.027 | 1 | 0.027 | 0 | 0.0 | 0 | 0.0 |

1

PART-TIME STUDENT PARTICIPATION RATES IN ALBERTA CCS AREAS
FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF VICTORIA | | UNIVERSITY OF B.C. | | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % | F | % |
| 2689 | 2130 | 0 | 0.0 | 1 | 0.047 | 0 | 0.0 | 0 | 0.0 |
| 2690 | 2460 | 0 | 0.0 | 0 | 0.0 | 1 | 0.041 | 0 | 0.0 |
| 2692 | 12910 | 0 | 0.0 | 1 | 0.008 | 1 | 0.008 | 0 | 0.0 |
| 2705 | 109050 | 4 | 0.004 | 11 | 0.010 | 2 | 0.002 | 0 | 0.0 |
| 2706 | 3475 | 0 | 0.0 | 1 | 0.029 | 0 | 0.0 | 0 | 0.0 |
| 2708 | 3090 | 0 | 0.0 | 0 | 0.0 | 3 | 0.097 | 0 | 0.0 |
| 2709 | 835 | 0 | 0.0 | 0 | 0.0 | 1 | 0.120 | 0 | 0.0 |
| 2723 | 975 | 0 | 0.0 | 1 | 0.103 | 0 | 0.0 | 0 | 0.0 |
| 2726 | 1100 | 0 | 0.0 | 0 | 0.0 | 2 | 0.182 | 0 | 0.0 |
| 2729 | 2960 | 0 | 0.0 | 1 | 0.034 | 4 | 0.135 | 0 | 0.0 |
| 2733 | 103345 | 2 | 0.002 | 1 | 0.001 | 5 | 0.005 | 0 | 0.0 |
| 2753 | 2010 | 0 | 0.0 | 1 | 0.050 | 0 | 0.0 | 0 | 0.0 |
| 2764 | 5690 | 0 | 0.0 | 0 | 0.0 | 1 | 0.018 | 0 | 0.0 |

## FULL-TIME STUDENT PARTICIPATION RATES IN SASKATCHEWAN CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | | BRANDON UNIVERSITY | | UNIVERSITY OF MANITOBA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | |
| 2377 | 200 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.500 | 0 | 0.0 |
| 2409 | 545 | 0 | 0.0 | 1 | 0.183 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2426 | 375 | 1 | 0.267 | 1 | 0.267 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2432 | 425 | 1 | 0.235 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2439 | 185 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.541 |
| 2440 | 165 | 0 | 0.0 | 0 | 0.0 | 5 | 3.030 | 0 | 0.0 | 0 | 0.0 |
| 2445 | 560 | 0 | 0.0 | 0 | 0.0 | 1 | 0.179 | 0 | 0.0 | 0 | 0.0 |
| 2446 | 145 | 0 | 0.0 | 0 | 0.0 | 1 | 0.690 | 0 | 0.0 | 0 | 0.0 |
| 2455 | 135 | 0 | 0.0 | 1 | 0.741 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2457 | 430 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.233 | 0 | 0.0 |
| 2460 | 29020 | 0 | 0.0 | 7 | 0.024 | 9 | 0.031 | 0 | 0.0 | 1 | 0.003 |
| 2467 | 125 | 0 | 0.0 | 0 | 0.0 | 1 | 0.800 | 0 | 0.0 | 0 | 0.0 |
| 2468 | 265 | 0 | 0.0 | 1 | 0.377 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2471 | 115 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.870 | 0 | 0.0 |
| 2478 | 5930 | 0 | 0.0 | 1 | 0.017 | 1 | 0.017 | 0 | 0.0 | 1 | 0.017 |
| 2482 | 210 | 0 | 0.0 | 1 | 0.476 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | | BRANDON UNIVERSITY | | UNIVERSITY OF MANITOBA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | |
| 2487 | 205 | 0 | 0.0 | 0 | 0.0 | 1 | 0.488 | 0 | 0.0 | 0 | 0.0 |
| 2494 | 2765 | 0 | 0.0 | 2 | 0.072 | 1 | 0.036 | 0 | 0.0 | 0 | 0.0 |
| 2508 | 125 | 1 | 0.800 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2510 | 490 | 0 | 0.0 | 0 | 0.0 | 1 | 0.204 | 0 | 0.0 | 0 | 0.0 |
| 2519 | 410 | 0 | 0.0 | 1 | 0.244 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2521 | 365 | 0 | 0.0 | 2 | 0.548 | 1 | 0.274 | 0 | 0.0 | 0 | 0.0 |
| 2544 | 260 | 0 | 0.0 | 1 | 0.385 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2597 | 250 | 0 | 0.0 | 1 | 0.400 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2607 | 195 | 0 | 0.0 | 0 | 0.0 | 1 | 0.513 | 0 | 0.0 | 0 | 0.0 |
| 2614 | 540 | 1 | 0.185 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2618 | 175 | 0 | 0.0 | 1 | 0.571 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2620 | 825 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.121 |
| 2641 | 5195 | 0 | 0.0 | 2 | 0.038 | 2 | 0.038 | 0 | 0.0 | 0 | 0.0 |
| 2645 | 495 | 0 | 0.0 | 0 | 0.0 | 1 | 0.202 | 0 | 0.0 | 0 | 0.0 |
| 2671 | 265 | 0 | 0.0 | 0 | 0.0 | 1 | 0.377 | 0 | 0.0 | 0 | 0.0 |
| 2672 | 910 | 0 | 0.0 | 0 | 0.0 | 3 | 0.330 | 0 | 0.0 | 0 | 0.0 |
| 2684 | 1265 | 0 | 0.0 | 1 | 0.079 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | | BRANDON UNIVERSITY | | UNIVERSITY OF MANITOBA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | |
| 3079 | 27730 | 0 | 0.0 | 3 | 0.011 | 2 | 0.007 | 0 | 0.0 | 3 | 0.011 |

## PART-TIME STUDENT PARTICIPATION RATES IN SASKATCHEWAN CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | | BRANDON UNIVERSITY | | UNIVERSITY OF MANITOBA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | |
| 2365 | 1770 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.056 | 0 | 0.0 |
| 2381 | 95 | 1 | 1.053 | 0 | 0.0 | 0 | 0.0 | 1 | 1.053 | 0 | 0.0 |
| 2409 | 545 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.183 |
| 2440 | 165 | 0 | 0.0 | 0 | 0.0 | 5 | 3.030 | 0 | 0.0 | 0 | 0.0 |
| 2450 | 890 | 0 | 0.0 | 0 | 0.0 | 1 | 0.112 | 0 | 0.0 | 0 | 0.0 |
| 2460 | 29020 | 1 | 0.003 | 1 | 0.003 | 1 | 0.003 | 0 | 0.0 | 0 | 0.0 |
| 2478 | 5930 | 0 | 0.0 | 0 | 0.0 | 1 | 0.017 | 0 | 0.0 | 1 | 0.017 |
| 2494 | 2765 | 1 | 0.036 | 1 | 0.036 | 1 | 0.036 | 0 | 0.0 | 1 | 0.036 |
| 2500 | 275 | 1 | 0.364 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2507 | 260 | 1 | 0.385 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| 2562 | 190 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.526 | 0 | 0.0 |
| 2584 | 280 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 0.714 |
| 2601 | 130 | 0 | 0.0 | 0 | 0.0 | 1 | 0.769 | 0 | 0.0 | 0 | 0.0 |
| 2614 | 540 | 0 | 0.0 | 0 | 0.0 | 1 | 0.185 | 0 | 0.0 | 0 | 0.0 |
| 2653 | 2425 | 0 | 0.0 | 0 | 0.0 | 1 | 0.041 | 0 | 0.0 | 0 | 0.0 |
| 2666 | 95 | 0 | 0.0 | 0 | 0.0 | 1 | 1.053 | 0 | 0.0 | 0 | 0.0 |

CONTINUED

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF LETHBRIDGE | | UNIVERSITY OF CALGARY | | UNIVERSITY OF ALBERTA | | BRANDON UNIVERSITY | | UNIVERSITY OF MANITOBA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | |
| 3079 | 27730 | 1 | 0.004 | 1 | 0.004 | 6 | 0.022 | 0 | 0.0 | 1 | 0.004 |
| 3083 | 550 | 0 | 0.0 | 0 | 0.0 | 1 | 0.182 | 0 | 0.0 | 0 | 0.0 |

## FULL-TIME STUDENT PARTICIPATION RATES IN MANITOBA CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2215 | 590 | 1 | 0.169 | 0 | 0.0 |
| 2236 | 2610 | 0 | 0.0 | 1 | 0.038 |
| 2243 | 7095 | 2 | 0.028 | 0 | 0.0 |
| 2255 | 830 | 0 | 0.0 | 1 | 0.120 |
| 2897 | 1970 | 1 | 0.051 | 0 | 0.0 |
| 2904 | 3475 | 5 | 0.144 | 0 | 0.0 |
| 2907 | 3475 | 3 | 0.086 | 0 | 0.0 |
| 2950 | 99650 | 3 | 0.003 | 2 | 0.002 |

PART-TIME STUDENT PARTICIPATION RATES IN MANITOBA CCS AREAS
FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | UNIVERSITY OF SASKATCHEWAN | | UNIVERSITY OF REGINA | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| 2238 | 930 | 1 | 0.108 | 0 | 0.0 |
| 2243 | 7095 | 1 | 0.014 | 0 | 0.0 |
| 2283 | 645 | 1 | 0.155 | 0 | 0.0 |
| 2298 | 330 | 1 | 0.303 | 0 | 0.0 |
| 2904 | 3475 | 1 | 0.029 | 0 | 0.0 |
| 2950 | 99650 | 2 | 0.002 | 0 | 0.0 |

## FULL-TIME STUDENT PARTICIPATION RATES IN WESTERN ONTARIO CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY |  | UNIVERSITY OF MANITOBA |  |
|---|---|---|---|---|---|
|  |  | F | % | F | % |
| 2032 | 1790 | 0 | 0.0 | 5 | 0.279 |
| 2115 | 20475 | 0 | 0.0 | 8 | 0.039 |
| 3029 | 8600 | 0 | 0.0 | 19 | 0.221 |

PART-TIME STUDENT PARTICIPATION RATES IN WESTERN ONTARIO CCS AREAS FOR UNIVERSITIES IN ADJACENT PROVINCES

| CCS | NUMBER OF PROSPECTIVE STUDENTS | BRANDON UNIVERSITY |  | UNIVERSITY OF MANITOBA |  |
|---|---|---|---|---|---|
|  |  | F | % | F | % |
| 3029 | 8600 | 0 | 0.0 | 2 | 0.023 |

# APPENDIX D

# PEARSON CORRELATION MATRICES FOR REGRESSION ANALYSES

## Correlation Matrix Key

| Variable Identification | Variable |
|---|---|
| PART | Part-Time Participation (%) |
| LPART | Log of PART |
| SRPART | Square Root of PART |
| FULL | Full-Time Participation (%) |
| LFULL | Log of FULL |
| SRFULL | Square Root of FULL |
| V7 | Distance (miles) Migrated |
| LDIST | Log of V7 |
| SRDIST | Square Root of V7 |
| V8 | Family Income 5 Years Earlier |
| LV8 | Log V8 |
| SRV8 | Square Root V8 |
| AGE | % Prospective Students under 25 yrs. |
| LAGE | Log of AGE |
| SRAGE | Square Root of AGE |
| EDUC | % of Total Popul. 15 yrs & over with university |
| LEDUC | Log of EDUC |
| SREDUC | Square Root of EDUC |
| V13 | Average Family Size (fam.'s with one or more children) |
| LV13 | Log of V13 |
| SRV13 | Square Root of V13 |
| UNEMP | % Prospective Students Unemployed |
| LUNEMP | Log of UNEMP |
| SRUNEMP | Square Root of UNEMP |

```
              PART      V7        LDIST     SRDIST    V8        AGE       EDUC      SRV8      SRAGE     SRUNEMP   SRV13

PART          1.00000  -0.17139  -0.13125  -0.16159  -0.36609   0.11108  -0.27084  -0.37021   0.08410  -0.24172   0.15896
V7           -0.17139   1.00000   0.88330   0.97577   0.43220   0.04367   0.29679   0.41695   0.05484   0.31980  -0.08362
LDIST        -0.13125   0.88330   1.00000   0.96227   0.27712   0.05752   0.13810   0.26669   0.06380   0.23460  -0.07156
SRDIST       -0.16159   0.97577   0.96227   1.00000   0.38195   0.05225   0.24463   0.36831   0.06156   0.29318  -0.08666
V8           -0.36609   0.43220   0.27712   0.38195   1.00000  -0.00803   0.73713   0.99704   0.01833   0.52996  -0.32513
AGE           0.11108   0.04367   0.05752   0.05225  -0.00803   1.00000  -0.03243  -0.01002   0.99383  -0.01912   0.20100
EDUC         -0.27084   0.29679   0.13810   0.24463   0.73713  -0.03243   1.00000   0.72501  -0.01931   0.29550  -0.40475
SRV8         -0.37021   0.41695   0.26669   0.36831   0.99704  -0.01002   0.72501   1.00000   0.01704   0.52900  -0.32498
SRAGE         0.08410   0.05484   0.06380   0.06156   0.01833   0.99383  -0.01931   0.01704   1.00000   0.00440   0.18404
SRUNEMP      -0.24172   0.31980   0.23460   0.29318   0.52996  -0.01912   0.29550   0.52900   0.00440   1.00000  -0.21487
SRV13         0.15896  -0.08362  -0.07156  -0.08666  -0.32513   0.20100  -0.40475  -0.32498   0.18404  -0.21487   1.00000

SRPART        0.87729  -0.32847  -0.27444  -0.31718  -0.59512   0.08408  -0.46875  -0.59599   0.04924  -0.38514   0.29171
LEDUC        -0.29156   0.29916   0.15237   0.25172   0.75022  -0.04162   0.98845   0.74549  -0.02461   0.31542  -0.39099
SREDUC       -0.28400   0.30103   0.14653   0.25060   0.75106  -0.03825   0.99236   0.74244  -0.02306   0.30950  -0.40185
UNEMP        -0.17444   0.35444   0.27796   0.33139   0.46026  -0.08150   0.22902   0.45576  -0.06327   0.93524  -0.19371
V13           0.16478  -0.08352  -0.07153  -0.08668  -0.32659   0.20041  -0.40167  -0.32571   0.18329  -0.21677   0.99962
LPART         0.56327  -0.46642  -0.40264  -0.45350  -0.67893   0.04002  -0.62510  -0.67173   0.01231  -0.40335   0.34835

LV8          -0.37064   0.39828   0.25376   0.35148   0.98733  -0.01148   0.70660   0.99658   0.01496   0.52270  -0.32225
LAGE          0.05437   0.05484   0.06914   0.06977   0.04647   0.97343  -0.00535   0.04497   0.99271   0.02963   0.16164
LUNEMP       -0.17533   0.34114   0.26678   0.32040   0.48747  -0.07329   0.27240   0.47976  -0.05482   0.94110  -0.24497
LV13          0.15288  -0.08359  -0.07160  -0.08661  -0.32425   0.20137  -0.40742  -0.32383   0.18460  -0.21280   0.99962


              SRPART    LEDUC     SREDUC    UNEMP     V13       LPART               LV8       LAGE      LUNEMP    LV13

PART          0.87729  -0.29156  -0.28400  -0.17444   0.16478   0.56327            -0.37064   0.05437  -0.17533   0.15288
V7           -0.32847   0.29916   0.30103   0.35444  -0.08352  -0.46642             0.39828   0.05484   0.34114  -0.08359
LDIST        -0.27444   0.15237   0.14653   0.27796  -0.07153  -0.40264             0.25376   0.06914   0.26678  -0.07160
SRDIST       -0.31718   0.25172   0.25060   0.33139  -0.08668  -0.45350             0.35148   0.06977   0.32040  -0.08661
V8           -0.59512   0.75022   0.75106   0.46026  -0.32659  -0.67893             0.98733   0.04647   0.48747  -0.32425
AGE           0.08408  -0.04162  -0.03825  -0.08150   0.20041   0.04002            -0.01148   0.97343  -0.07329   0.20137
EDUC         -0.46875   0.98845   0.99236   0.22902  -0.40167  -0.62510             0.70660  -0.00535   0.27240  -0.40742
SRV8         -0.59599   0.74549   0.74244   0.45576  -0.32571  -0.67173             0.99658   0.04497   0.47976  -0.32383

SRAGE         0.04924  -0.02461  -0.02306  -0.06327   0.18329   0.01231             0.01496   0.99271  -0.05482   0.18460
SRUNEMP      -0.38514   0.31542   0.30950   0.93524  -0.21677  -0.40335             0.52270   0.02963   0.94110  -0.21280
SRV13         0.29171  -0.39099  -0.40185  -0.19371   0.99962   0.34835            -0.32225   0.16164  -0.24497   0.99962

SRPART        1.00000  -0.48826  -0.48324  -0.28407   0.29678   0.85851            -0.59099   0.01188  -0.29832   0.28626
LEDUC        -0.48826   1.00000   0.99163   0.24870  -0.38943  -0.61046             0.73415  -0.00613   0.27938  -0.39214
SREDUC       -0.48324   0.99163   1.00000   0.24265  -0.39953  -0.62419             0.72731  -0.00670   0.28005  -0.40375
UNEMP        -0.28407   0.24870   0.24265   1.00000  -0.19387  -0.30584             0.44646  -0.04217   0.95439  -0.19321
V13           0.29678  -0.38943  -0.39953  -0.19387   1.00000   0.35029            -0.32323   0.16079  -0.24504   0.99847
LPART         0.85851  -0.61046  -0.62419  -0.30584   0.35029   1.00000            -0.65715  -0.01674  -0.34467   0.34596

LV8          -0.59099   0.73415   0.72731   0.44646  -0.32323  -0.65715             1.00000   0.04236   0.46702  -0.32084
LAGE          0.01188  -0.00613  -0.00670  -0.04217   0.16079  -0.01674             0.04235   1.00000  -0.03375   0.16235
LUNEMP       -0.29832   0.27938   0.28005   0.95438  -0.24504  -0.34467             0.46702  -0.03375   1.00000  -0.24452
LV13          0.28626  -0.39214  -0.40375  -0.19321   0.99847   0.34596            -0.32084   0.16235  -0.24452   1.00000
```

Pearson Correlations:  Pooled University CCS Areas with Full-Time Enrollment

| | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.35486 | -0.32396 | -0.35469 | -0.48132 | 0.05658 | -0.31029 | -0.35361 | -0.33628 | -0.22602 | -0.30944 |
| V7 | -0.35486 | 1.00000 | 0.88672 | 0.97629 | 0.39835 | 0.04378 | 0.21630 | 0.22763 | 0.22578 | 0.28827 | 0.29027 |
| LDIST | -0.32396 | 0.88672 | 1.00000 | 0.96376 | 0.29456 | 0.04876 | 0.10497 | 0.11878 | 0.11413 | 0.24814 | 0.23503 |
| SRDIST | -0.35469 | 0.97629 | 0.96376 | 1.00000 | 0.36880 | 0.04692 | 0.17972 | 0.18184 | 0.18920 | 0.28040 | 0.27634 |
| V8 | -0.48132 | 0.39835 | 0.29456 | 0.36880 | 1.00000 | -0.07746 | 0.67732 | 0.69702 | 0.69654 | 0.43169 | 0.50405 |
| AGE | 0.05658 | 0.04378 | 0.04876 | 0.04692 | -0.07746 | 1.00000 | -0.10198 | -0.11962 | -0.11237 | -0.09299 | -0.06380 |
| EDUC | -0.31029 | 0.21630 | 0.10497 | 0.17972 | 0.67732 | -0.10198 | 1.00000 | 0.95831 | 0.98947 | 0.19887 | 0.26416 |
| LEDUC | -0.35351 | 0.22763 | 0.11878 | 0.18184 | 0.69702 | -0.11962 | 0.95831 | 1.00000 | 0.98930 | 0.21992 | 0.28894 |
| SREDUC | -0.33628 | 0.22578 | 0.11413 | 0.18920 | 0.69654 | -0.11237 | 0.98947 | 0.98930 | 1.00000 | 0.21324 | 0.28063 |
| UNEMP | -0.22602 | 0.28827 | 0.24814 | 0.28040 | 0.43169 | -0.09299 | 0.19887 | 0.21992 | 0.21324 | 1.00000 | 0.94176 |
| SRUNEMP | -0.30944 | 0.29027 | 0.23503 | 0.27634 | 0.50405 | -0.06380 | 0.26416 | 0.28894 | 0.28063 | 0.94176 | 1.00000 |
| V13 | 0.13252 | -0.01536 | -0.02951 | -0.02621 | -0.23262 | 0.24317 | -0.31068 | -0.29420 | -0.30669 | -0.20514 | -0.22133 |
| LFULL | 0.74889 | -0.55110 | -0.48998 | -0.54202 | -0.60190 | 0.05943 | -0.46783 | -0.49005 | -0.48665 | -0.28297 | -0.36697 |
| LV8 | -0.49082 | 0.37240 | 0.27410 | 0.34449 | 0.98803 | -0.07567 | 0.65072 | 0.68895 | 0.67778 | 0.41904 | 0.49934 |
| LAGE | -0.00399 | 0.06986 | 0.06837 | 0.07090 | -0.03372 | 0.97612 | -0.08008 | -0.08362 | -0.08314 | -0.06523 | -0.01676 |
| SRAGE | 0.02733 | 0.05759 | 0.05943 | 0.05977 | -0.05561 | 0.99461 | -0.09144 | -0.10241 | -0.09837 | -0.07573 | -0.04156 |
| LUNEMP | -0.24801 | 0.29669 | 0.25173 | 0.28787 | 0.46041 | -0.08852 | 0.23162 | 0.24492 | 0.24239 | 0.96022 | 0.95028 |
| LV13 | 0.12371 | -0.01507 | -0.02933 | -0.02591 | -0.22817 | 0.24217 | -0.31835 | -0.29785 | -0.31234 | -0.20095 | -0.21428 |
| SRFULL | 0.94642 | -0.47155 | -0.42770 | -0.46859 | -0.57624 | 0.07106 | -0.39730 | -0.43941 | -0.42444 | -0.27988 | -0.36808 |
| SRV8 | -0.48818 | 0.38689 | 0.28564 | 0.35813 | 0.99713 | -0.07652 | 0.66617 | 0.69433 | 0.68946 | 0.42729 | 0.50387 |
| SRV13 | 0.12821 | -0.01626 | -0.02948 | -0.02612 | -0.23110 | 0.24280 | -0.31469 | -0.29622 | -0.30970 | -0.20324 | -0.21801 |

| | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.13252 | 0.74889 | -0.49082 | -0.00399 | 0.02733 | -0.24801 | 0.12371 | 0.94642 | -0.48818 | 0.12821 |
| V7 | -0.01536 | -0.55110 | 0.37240 | 0.06986 | 0.05759 | 0.29669 | -0.01507 | -0.47155 | 0.38689 | -0.01626 |
| LDIST | -0.02951 | -0.48998 | 0.27410 | 0.06837 | 0.05943 | 0.25173 | -0.02933 | -0.42770 | 0.28564 | -0.02948 |
| SRDIST | -0.02621 | -0.54202 | 0.34449 | 0.07090 | 0.05977 | 0.28787 | -0.02591 | -0.46859 | 0.35813 | -0.02612 |
| V8 | -0.23262 | -0.60190 | 0.98803 | -0.03372 | -0.05561 | 0.46041 | -0.22817 | -0.57624 | 0.99713 | -0.23110 |
| AGE | 0.24317 | 0.05943 | -0.07567 | 0.97612 | 0.99461 | -0.08852 | 0.24217 | 0.07106 | -0.07652 | 0.24280 |
| EDUC | -0.31068 | -0.46783 | 0.65072 | -0.08008 | -0.09144 | 0.23162 | -0.31835 | -0.39730 | 0.66617 | -0.31469 |
| LEDUC | -0.29420 | -0.49005 | 0.68895 | -0.08362 | -0.10241 | 0.24492 | -0.29785 | -0.43941 | 0.69433 | -0.29622 |
| SREDUC | -0.30669 | -0.48665 | 0.67778 | -0.08314 | -0.09837 | 0.24239 | -0.31234 | -0.42444 | 0.68946 | -0.30970 |
| UNEMP | -0.20514 | -0.28297 | 0.41904 | -0.06523 | -0.07573 | 0.96022 | -0.20095 | -0.27988 | 0.42729 | -0.20324 |
| SRUNEMP | -0.22133 | -0.36697 | 0.49934 | -0.01676 | -0.04156 | 0.95028 | -0.21428 | -0.36808 | 0.50387 | -0.21801 |
| V13 | 1.00000 | 0.19699 | -0.21423 | 0.21147 | 0.23011 | -0.24447 | 0.99804 | 0.16836 | -0.22466 | 0.99951 |
| LFULL | 0.19699 | 1.00000 | -0.59370 | 0.00865 | 0.03482 | -0.31881 | 0.19210 | 0.91069 | -0.60042 | 0.18473 |
| LV8 | -0.21423 | -0.59370 | 1.00000 | -0.02981 | -0.05285 | 0.44434 | -0.21010 | -0.58023 | 0.99685 | -0.21237 |
| LAGE | 0.21147 | 0.00865 | -0.02981 | 1.00000 | 0.99327 | -0.05008 | 0.21223 | 0.00992 | -0.03148 | 0.21195 |
| SRAGE | 0.23011 | 0.03482 | -0.05285 | 0.99327 | 1.00000 | -0.07085 | 0.23000 | 0.04157 | -0.05409 | 0.23018 |
| LUNEMP | -0.24447 | -0.31881 | 0.44434 | -0.05008 | -0.07085 | 1.00000 | -0.24028 | -0.30491 | 0.45441 | -0.24258 |
| LV13 | 0.99804 | 0.19210 | -0.21010 | 0.21223 | 0.23000 | -0.24028 | 1.00000 | 0.16075 | -0.22083 | 0.99951 |
| SRFULL | 0.16836 | 0.91069 | -0.58023 | 0.00992 | 0.04157 | -0.30491 | 0.16075 | 1.00000 | -0.58076 | 0.16471 |
| SRV8 | -0.22466 | -0.60042 | 0.99685 | -0.03148 | -0.05409 | 0.45441 | -0.22083 | -0.58076 | 1.00000 | -0.22295 |
| SRV13 | 0.99951 | 0.19473 | -0.21237 | 0.21195 | 0.23018 | -0.24258 | 0.99951 | 0.16471 | -0.22295 | 1.00000 |

Pearson Correlations: Pooled University CCS Areas with Part-Time Enrollment

| | FULL | PROSP | V7 | LDIST | SRDIST | V8 | V9 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | 0.06491 | -0.52373 | -0.69151 | -0.60101 | 0.15677 | -0.08492 | -0.35591 | 0.11987 | 0.15415 | 0.13851 | 0.08674 | 0.12085 | -0.16670 | 0.81921 | 0.16652 | -0.31044 | -0.33582 | 0.14069 | -0.17055 | 0.95791 |
| PROSP | 0.06491 | 1.00000 | -0.21471 | -0.24861 | -0.23818 | 0.49682 | 0.35275 | -0.23714 | 0.52583 | 0.57809 | 0.55588 | -0.19834 | -0.17123 | -0.48289 | -0.08325 | 0.49267 | -0.24650 | -0.24257 | -0.12391 | -0.47999 | 0.00051 |
| V7 | -0.52373 | -0.21471 | 1.00000 | 0.89986 | 0.98064 | 0.04022 | -0.08185 | 0.70016 | -0.16407 | -0.19349 | -0.17530 | -0.08994 | -0.16534 | 0.58009 | -0.50326 | 0.02289 | 0.67879 | 0.69269 | -0.23264 | 0.57926 | -0.52970 |
| LDIST | -0.69151 | -0.24861 | 0.89986 | 1.00000 | 0.96613 | 0.01500 | -0.10065 | 0.62528 | -0.23347 | -0.26582 | -0.25212 | 0.02638 | -0.01507 | 0.47400 | -0.50876 | -0.00250 | 0.62503 | 0.62774 | -0.06027 | 0.47854 | -0.62140 |
| SRDIST | -0.60101 | -0.23818 | 0.98064 | 0.96613 | 1.00000 | 0.03479 | -0.09365 | 0.68458 | -0.18693 | -0.22508 | -0.20791 | -0.03742 | -0.09771 | 0.54203 | -0.51083 | 0.01677 | 0.67312 | 0.68184 | -0.15537 | 0.54374 | -0.57548 |
| V8 | 0.15677 | 0.49682 | 0.04022 | 0.01500 | 0.03479 | 1.00000 | 0.11441 | 0.15398 | 0.32174 | 0.35256 | 0.33832 | 0.02446 | 0.05183 | -0.08855 | 0.09249 | 0.99701 | 0.17223 | 0.16357 | 0.09083 | -0.08756 | 0.14405 |
| V9 | -0.08492 | 0.35275 | -0.08185 | -0.10065 | -0.09365 | 0.11441 | 1.00000 | -0.13141 | 0.23348 | 0.25441 | 0.24695 | -0.13467 | -0.12825 | -0.16708 | -0.31045 | 0.11626 | -0.13968 | -0.13663 | -0.10803 | -0.16610 | -0.19571 |
| AGE | -0.35591 | -0.23714 | 0.70016 | 0.62528 | 0.68458 | 0.15398 | -0.13141 | 1.00000 | -0.15679 | -0.22272 | -0.19260 | -0.06380 | -0.11970 | 0.49140 | -0.41236 | 0.15044 | 0.98658 | 0.99690 | -0.16973 | 0.49000 | -0.39807 |
| EDUC | 0.11987 | 0.52583 | -0.16407 | -0.23347 | -0.18693 | 0.32174 | 0.23348 | -0.15679 | 1.00000 | 0.97625 | 0.99400 | -0.18450 | -0.18055 | -0.58428 | -0.02705 | 0.31454 | -0.21293 | -0.18456 | -0.15709 | -0.61351 | 0.05541 |
| LEDUC | 0.15415 | 0.57808 | -0.19349 | -0.26582 | -0.22508 | 0.35256 | 0.25441 | -0.22272 | 0.97625 | 1.00000 | 0.99404 | -0.14817 | -0.14082 | -0.58187 | 0.00008 | 0.35081 | -0.26619 | -0.24457 | -0.11778 | -0.60597 | 0.09089 |
| SREDUC | 0.13851 | 0.55588 | -0.17530 | -0.25212 | -0.20791 | 0.33832 | 0.24695 | -0.19260 | 0.99400 | 0.99404 | 1.00000 | -0.16833 | -0.16259 | -0.58708 | -0.01403 | 0.33374 | -0.24271 | -0.21756 | -0.13905 | -0.61382 | 0.07379 |
| UNEMP | 0.08674 | -0.19834 | -0.08994 | 0.02638 | -0.03742 | 0.02446 | -0.13467 | -0.06380 | -0.18450 | -0.14817 | -0.16833 | 1.00000 | 0.98027 | 0.29674 | 0.31591 | 0.03486 | -0.01893 | -0.04201 | 0.91701 | 0.28207 | 0.20902 |
| SRUNEMP | 0.12085 | -0.17123 | -0.16534 | -0.01507 | -0.09771 | 0.05183 | -0.12825 | -0.11970 | -0.18055 | -0.14082 | -0.16259 | 0.98027 | 1.00000 | 0.20519 | 0.35038 | 0.06221 | -0.06740 | -0.09464 | 0.97659 | 0.19515 | 0.23890 |
| V13 | -0.16670 | -0.48289 | 0.58009 | 0.47400 | 0.54203 | -0.08855 | -0.16708 | 0.49140 | -0.58428 | -0.58187 | -0.58708 | 0.29674 | 0.20519 | 1.00000 | -0.09183 | -0.08690 | 0.50336 | 0.49964 | 0.09815 | 0.99817 | -0.13742 |
| LFULL | 0.81921 | -0.08325 | -0.50326 | -0.50876 | -0.51083 | 0.09249 | -0.31045 | -0.41236 | -0.02705 | 0.00008 | -0.01403 | 0.31591 | 0.35038 | -0.09183 | 1.00000 | 0.09822 | -0.36201 | -0.38974 | 0.35710 | -0.09806 | 0.94412 |
| LV8 | 0.16652 | 0.49267 | 0.02289 | -0.00250 | 0.01677 | 0.99701 | 0.11626 | 0.15044 | 0.31454 | 0.35081 | 0.33374 | 0.03486 | 0.06221 | -0.08690 | 0.09822 | 1.00000 | 0.16820 | 0.15977 | 0.10156 | -0.08560 | 0.15212 |
| LAGE | -0.31044 | -0.24650 | 0.67879 | 0.62503 | 0.67312 | 0.17223 | -0.13968 | 0.98658 | -0.21293 | -0.26619 | -0.24271 | -0.01893 | -0.06740 | 0.50336 | -0.36201 | 0.16820 | 1.00000 | 0.99635 | -0.11405 | 0.50638 | -0.34646 |
| SRAGE | -0.33582 | -0.24257 | 0.69269 | 0.62774 | 0.68184 | 0.16357 | -0.13663 | 0.99690 | -0.18456 | -0.24457 | -0.21756 | -0.04201 | -0.09464 | 0.49964 | -0.38974 | 0.15977 | 0.99635 | 1.00000 | -0.14336 | 0.50038 | -0.37500 |
| LUNEMP | 0.14069 | -0.12391 | -0.23264 | -0.06027 | -0.15537 | 0.09083 | -0.10803 | -0.16973 | -0.15709 | -0.11778 | -0.13905 | 0.91701 | 0.97659 | 0.09815 | 0.35710 | 0.10156 | -0.11405 | -0.14336 | 1.00000 | 0.09247 | 0.25340 |
| LV13 | -0.17055 | -0.47999 | 0.57926 | 0.47854 | 0.54374 | -0.08756 | -0.16610 | 0.49000 | -0.61351 | -0.60597 | -0.61382 | 0.28207 | 0.19515 | 0.99817 | -0.09806 | -0.08560 | 0.50638 | 0.50038 | 0.09247 | 1.00000 | -0.14238 |
| SRFULL | 0.95791 | 0.00051 | -0.52970 | -0.62140 | -0.57548 | 0.14405 | -0.19571 | -0.39807 | 0.05541 | 0.09089 | 0.07379 | 0.20902 | 0.23890 | -0.13742 | 0.94412 | 0.15212 | -0.34646 | -0.37500 | 0.25340 | -0.14238 | 1.00000 |

Pearson Correlations: University of Victoria CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.31402 | -0.51521 | -0.40363 | 0.00251 | -0.23204 | 0.14145 | 0.00707 | -0.22215 | -0.26158 | -0.14071 |
| V7 | -0.31402 | 1.00000 | 0.90714 | 0.98067 | 0.31627 | 0.57912 | -0.02249 | 0.30387 | 0.57293 | 0.04705 | 0.48536 |
| LDIST | -0.51521 | 0.90714 | 1.00000 | 0.97009 | 0.17691 | 0.56759 | -0.26799 | 0.16470 | 0.55982 | 0.22680 | 0.50654 |
| SRDIST | -0.40363 | 0.98067 | 0.97009 | 1.00000 | 0.25521 | 0.58519 | -0.13967 | 0.24249 | 0.58366 | 0.14142 | 0.50733 |
| V8 | 0.00251 | 0.31627 | 0.17691 | 0.25521 | 1.00000 | 0.59001 | 0.27126 | 0.99941 | 0.58361 | -0.27182 | 0.21803 |
| AGE | -0.23204 | 0.57912 | 0.56759 | 0.58519 | 0.59001 | 1.00000 | -0.20598 | 0.58324 | 0.99613 | 0.20355 | 0.53173 |
| EDUC | 0.14145 | -0.02249 | -0.26799 | -0.13967 | 0.27126 | -0.20598 | 1.00000 | 0.27187 | -0.26071 | -0.58150 | -0.59285 |
| SRV8 | 0.00707 | 0.30387 | 0.16470 | 0.24249 | 0.99941 | 0.58324 | 0.27187 | 1.00000 | 0.57711 | -0.26808 | 0.21616 |
| SRAGE | -0.22215 | 0.57293 | 0.55982 | 0.58366 | 0.58361 | 0.99613 | -0.26071 | 0.57711 | 1.00000 | 0.23492 | 0.55685 |
| SRUNEMP | -0.26158 | 0.04705 | 0.22680 | 0.14142 | -0.27182 | 0.20355 | -0.58150 | -0.26808 | 0.23492 | 1.00000 | 0.28704 |
| SRV13 | -0.14071 | 0.48536 | 0.50654 | 0.50733 | 0.21803 | 0.53173 | -0.59285 | 0.21616 | 0.55685 | 0.28704 | 1.00000 |
| SRPART | 0.95998 | -0.40252 | -0.54956 | -0.47335 | -0.09681 | -0.28602 | 0.01051 | -0.09286 | -0.27774 | -0.17469 | -0.11210 |
| LEDUC | 0.11173 | -0.02345 | -0.26001 | -0.13770 | 0.32580 | -0.18803 | 0.98458 | 0.32917 | -0.22721 | -0.54882 | -0.57487 |
| SREDUC | 0.12805 | -0.02233 | -0.28481 | -0.13869 | 0.29901 | -0.19710 | 0.99641 | 0.30092 | -0.23920 | -0.56826 | -0.58605 |
| UNEMP | -0.25991 | 0.06223 | 0.23094 | 0.15130 | -0.26796 | 0.19333 | -0.55147 | -0.26394 | 0.22260 | 0.99518 | 0.28510 |
| V13 | -0.13811 | 0.48417 | 0.50461 | 0.50568 | 0.21615 | 0.52829 | -0.58920 | 0.21428 | 0.55278 | 0.28629 | 0.99990 |
| LPART | 0.80405 | -0.46926 | -0.52774 | -0.50203 | -0.21020 | -0.33893 | -0.18387 | -0.20677 | -0.32793 | 0.00431 | -0.04379 |
| LV8 | 0.01118 | 0.29086 | 0.15216 | 0.22926 | 0.99763 | 0.57528 | 0.27274 | 0.99940 | 0.56943 | -0.26434 | 0.21350 |
| LAGE | -0.20925 | 0.56103 | 0.55642 | 0.57629 | 0.57030 | 0.98393 | -0.29624 | 0.56419 | 0.99580 | 0.26468 | 0.57811 |
| LUNEMP | -0.26927 | 0.03254 | 0.22068 | 0.13095 | -0.26927 | 0.21328 | -0.60669 | -0.26579 | 0.24682 | 0.99585 | 0.28772 |
| LV13 | -0.14328 | 0.48642 | 0.50844 | 0.50886 | 0.21990 | 0.53514 | -0.59639 | 0.21802 | 0.56089 | 0.28780 | 0.99990 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.95998 | 0.11173 | 0.12805 | -0.25991 | -0.13811 | 0.80405 | 0.01118 | -0.20925 | -0.25927 | -0.14328 |
| V7 | -0.40252 | -0.02345 | -0.02233 | 0.06223 | 0.48417 | -0.46926 | 0.29086 | 0.56103 | 0.03254 | 0.48642 |
| LDIST | -0.54956 | -0.26001 | -0.28481 | 0.23094 | 0.50461 | -0.52774 | 0.15216 | 0.55642 | 0.22068 | 0.50844 |
| SRDIST | -0.47335 | -0.13770 | -0.13869 | 0.15130 | 0.50568 | -0.50203 | 0.22926 | 0.57629 | 0.13095 | 0.50886 |
| V8 | -0.09681 | 0.32580 | 0.29901 | -0.26796 | 0.21615 | -0.21020 | 0.99763 | 0.57030 | -0.26927 | 0.21990 |
| AGE | -0.28602 | -0.18803 | -0.19710 | 0.19333 | 0.52829 | -0.33893 | 0.57528 | 0.98393 | 0.21328 | 0.53514 |
| EDUC | 0.01051 | 0.98458 | 0.99641 | -0.55147 | -0.58920 | -0.18387 | 0.27274 | -0.29624 | -0.60669 | -0.59639 |
| SRV8 | -0.09286 | 0.32917 | 0.30092 | -0.26394 | 0.21428 | -0.20677 | 0.99940 | 0.56419 | -0.26579 | 0.21802 |
| SRAGE | -0.27774 | -0.22721 | -0.23920 | 0.22260 | 0.55278 | -0.32793 | 0.56943 | 0.99580 | 0.24682 | 0.56089 |
| SRUNEMP | -0.17469 | -0.54882 | -0.56826 | 0.99518 | 0.28629 | 0.00431 | -0.26434 | 0.26468 | 0.99585 | 0.28780 |
| SRV13 | -0.11210 | -0.57487 | -0.58605 | 0.28510 | 0.99990 | -0.04379 | 0.21350 | 0.57811 | 0.28772 | 0.99990 |
| SRPART | 1.00000 | -0.02141 | -0.00478 | -0.17275 | -0.10863 | 0.93167 | -0.08948 | -0.26615 | -0.17414 | -0.11555 |
| LEDUC | -0.02141 | 1.00000 | 0.99583 | -0.52233 | -0.57209 | -0.20642 | 0.33283 | -0.26672 | -0.57056 | -0.57755 |
| SREDUC | -0.00478 | 0.99583 | 1.00000 | -0.53991 | -0.58283 | -0.19583 | 0.30309 | -0.28188 | -0.59178 | -0.58917 |
| UNEMP | -0.17275 | -0.52233 | -0.53991 | 1.00000 | 0.28465 | 0.00309 | -0.25993 | 0.25011 | 0.98216 | 0.28555 |
| V13 | -0.10863 | -0.57209 | -0.58283 | 0.28465 | 1.00000 | -0.03969 | 0.21163 | 0.57338 | 0.28664 | 0.99960 |
| LPART | 0.93167 | -0.20642 | -0.19583 | 0.00309 | -0.03969 | 1.00000 | -0.20356 | -0.31367 | 0.00577 | -0.04789 |
| LV8 | -0.08948 | 0.33283 | 0.30309 | -0.25993 | 0.21163 | -0.20356 | 1.00000 | 0.55690 | -0.26232 | 0.21535 |
| LAGE | -0.26615 | -0.26672 | -0.28188 | 0.25011 | 0.57338 | -0.31367 | 0.55690 | 1.00000 | 0.27850 | 0.58280 |
| LUNEMP | -0.17414 | -0.57056 | -0.59178 | 0.98216 | 0.28664 | 0.00577 | -0.26232 | 0.27850 | 1.00000 | 0.28882 |
| LV13 | -0.11555 | -0.57755 | -0.58917 | 0.28555 | 0.99960 | -0.04789 | 0.21535 | 0.58280 | 0.28882 | 1.00000 |

Pearson Correlations: University of Victoria CCS Areas with Part-Time Enrollment

|  | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.20681 | -0.10067 | -0.16214 | -0.26719 | -0.10093 | -0.28048 | -0.28581 | -0.28584 | 0.16001 | 0.18638 |
| V7 | -0.20681 | 1.00000 | 0.91588 | 0.98219 | 0.28572 | 0.56632 | 0.08748 | 0.05252 | 0.07077 | -0.30439 | -0.33217 |
| LDIST | -0.10067 | 0.91588 | 1.00000 | 0.97413 | 0.26007 | 0.46756 | 0.08211 | 0.04426 | 0.06393 | -0.29107 | -0.30215 |
| SRDIST | -0.16214 | 0.98219 | 0.97413 | 1.00000 | 0.27822 | 0.53630 | 0.09043 | 0.05371 | 0.07285 | -0.30286 | -0.32409 |
| V8 | -0.26719 | 0.28572 | 0.25007 | 0.27822 | 1.00000 | 0.32756 | 0.35938 | 0.37370 | 0.36749 | -0.16260 | -0.17295 |
| AGE | -0.10093 | 0.56632 | 0.46756 | 0.53630 | 0.32756 | 1.00000 | 0.07662 | -0.00459 | 0.03452 | -0.06801 | -0.08696 |
| EDUC | -0.28048 | 0.08748 | 0.08211 | 0.09043 | 0.35938 | 0.07662 | 1.00000 | 0.97817 | 0.99460 | -0.29179 | -0.30999 |
| LEDUC | -0.28581 | 0.05252 | 0.04426 | 0.05371 | 0.37370 | -0.00459 | 0.97817 | 1.00000 | 0.99492 | -0.26117 | -0.27782 |
| SREDUC | -0.28584 | 0.07077 | 0.06393 | 0.07285 | 0.36749 | 0.03452 | 0.99460 | 0.99492 | 1.00000 | -0.27908 | -0.29671 |
| UNEMP | 0.16001 | -0.30439 | -0.29107 | -0.30286 | -0.16260 | -0.06801 | -0.29179 | -0.26117 | -0.27908 | 1.00000 | 0.99221 |
| SRUNEMP | 0.18638 | -0.33217 | -0.30215 | -0.32409 | -0.17295 | -0.08696 | -0.30999 | -0.27782 | -0.29671 | 0.99221 | 1.00000 |
| V13 | 0.08426 | 0.41328 | 0.29598 | 0.36553 | -0.08038 | 0.39131 | -0.57720 | -0.59161 | -0.58712 | 0.11434 | 0.08674 |
| LFULL | 0.75648 | -0.35147 | -0.20810 | -0.28891 | -0.16191 | -0.12022 | -0.33994 | -0.34560 | -0.34626 | 0.38655 | 0.44216 |
| LV8 | -0.28672 | 0.26736 | 0.22780 | 0.25746 | 0.99745 | 0.31807 | 0.34549 | 0.36614 | 0.35615 | -0.14099 | -0.15089 |
| LAGE | -0.06824 | 0.54450 | 0.44963 | 0.51597 | 0.32503 | 0.99152 | 0.03236 | -0.04326 | -0.00708 | -0.04812 | -0.07604 |
| SRAGE | -0.08524 | 0.55707 | 0.45995 | 0.52769 | 0.32738 | 0.99795 | 0.05428 | -0.02416 | 0.01349 | -0.05805 | -0.08655 |
| LUNEMP | 0.20803 | -0.35627 | -0.31219 | -0.34278 | -0.17758 | -0.12090 | -0.32098 | -0.28830 | -0.30761 | 0.96947 | 0.99237 |
| LV13 | 0.08972 | 0.40423 | 0.28778 | 0.35688 | -0.08055 | 0.37788 | -0.59893 | -0.60760 | -0.60607 | 0.11712 | 0.09011 |
| SRFULL | 0.93826 | -0.27874 | -0.14726 | -0.22188 | -0.21026 | -0.09644 | -0.33196 | -0.33466 | -0.33653 | 0.27509 | 0.31781 |
| SRV8 | -0.27690 | 0.27677 | 0.23918 | 0.26807 | 0.99937 | 0.32303 | 0.35252 | 0.36949 | 0.36190 | -0.15191 | -0.18205 |
| SRV13 | 0.08703 | 0.40899 | 0.29206 | 0.36141 | -0.08048 | 0.38488 | -0.58809 | -0.59964 | -0.59665 | 0.11566 | 0.08834 |

|  | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.08426 | 0.75648 | -0.28672 | -0.06824 | -0.08524 | 0.20803 | 0.08972 | 0.93826 | -0.27690 | 0.08703 |
| V7 | 0.41328 | -0.35147 | 0.26736 | 0.54450 | 0.55707 | -0.35627 | 0.40423 | -0.27874 | 0.27677 | 0.40899 |
| LDIST | 0.29598 | -0.20810 | 0.22780 | 0.44963 | 0.45995 | -0.31219 | 0.28778 | -0.14726 | 0.23918 | 0.29206 |
| SRDIST | 0.36553 | -0.28891 | 0.25746 | 0.51597 | 0.52769 | -0.34278 | 0.35688 | -0.22188 | 0.26807 | 0.36141 |
| V8 | -0.08038 | -0.16191 | 0.99745 | 0.32503 | 0.32738 | -0.17758 | -0.08055 | -0.21026 | 0.99937 | -0.08048 |
| AGE | 0.39131 | -0.12022 | 0.31807 | 0.99152 | 0.99795 | -0.12090 | 0.37788 | -0.09644 | 0.32303 | 0.38488 |
| EDUC | -0.57720 | -0.33994 | 0.34549 | 0.03236 | 0.05428 | -0.32098 | -0.59893 | -0.33196 | 0.35252 | -0.58809 |
| LEDUC | -0.59161 | -0.34560 | 0.36614 | -0.04326 | -0.02416 | -0.28830 | -0.60760 | -0.33466 | 0.36949 | -0.59964 |
| SREDUC | -0.58712 | -0.34626 | 0.35615 | -0.00708 | 0.01349 | -0.30761 | -0.60607 | -0.33653 | 0.36190 | -0.59665 |
| UNEMP | 0.11434 | 0.38655 | -0.14099 | -0.04812 | -0.05805 | 0.96947 | 0.11712 | 0.27509 | -0.15191 | 0.11566 |
| SRUNEMP | 0.08674 | 0.44216 | -0.15089 | -0.07604 | -0.08655 | 0.99237 | 0.09011 | 0.31781 | -0.18205 | 0.08834 |
| V13 | 1.00000 | 0.05351 | -0.07282 | 0.40535 | 0.39967 | 0.05367 | 0.99864 | 0.08056 | -0.07647 | 0.99966 |
| LFULL | 0.05351 | 1.00000 | -0.16785 | -0.06766 | -0.09476 | 0.48812 | 0.05871 | 0.92988 | -0.16490 | 0.05613 |
| LV8 | -0.07282 | -0.16785 | 1.00000 | 0.31606 | 0.31817 | -0.15559 | -0.07218 | -0.22318 | 0.99936 | -0.07251 |
| LAGE | 0.40535 | -0.06766 | 0.31606 | 1.00000 | 0.99779 | -0.09928 | 0.39535 | -0.05106 | 0.32077 | 0.40063 |
| SRAGE | 0.39967 | -0.09476 | 0.31817 | 0.99779 | 1.00000 | -0.11018 | 0.38794 | -0.07445 | 0.32300 | 0.39409 |
| LUNEMP | 0.05367 | 0.48812 | -0.15559 | -0.09928 | -0.11018 | 1.00000 | 0.05753 | 0.35307 | -0.16672 | 0.05551 |
| LV13 | 0.99864 | 0.05871 | -0.07218 | 0.39535 | 0.38794 | 0.05753 | 1.00000 | 0.08732 | -0.07624 | 0.99966 |
| SRFULL | 0.08056 | 0.92988 | -0.22318 | -0.05106 | -0.07445 | 0.35307 | 0.08732 | 1.00000 | -0.21668 | 0.08397 |
| SRV8 | -0.07647 | -0.16490 | 0.99936 | 0.32077 | 0.32300 | -0.16672 | -0.07624 | -0.21668 | 1.00000 | -0.07637 |
| SRV13 | 0.99966 | 0.05613 | -0.07251 | 0.40063 | 0.39409 | 0.05551 | 0.99966 | 0.08397 | -0.07637 | 1.00000 |

Pearson Correlations: University of British Columbia CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | 0.10933 | 0.12417 | 0.11781 | -0.09536 | 0.22907 | -0.29212 | -0.09685 | 0.23070 | 0.31234 | 0.49256 |
| V7 | 0.10933 | 1.00000 | 0.91784 | 0.98369 | 0.23213 | 0.59039 | 0.10138 | 0.22682 | 0.58227 | -0.19054 | 0.46002 |
| LDIST | 0.12417 | 0.91784 | 1.00000 | 0.97340 | 0.22707 | 0.52802 | 0.10374 | 0.21902 | 0.52198 | -0.14275 | 0.35197 |
| SRDIST | 0.11781 | 0.98369 | 0.97340 | 1.00000 | 0.23893 | 0.57865 | 0.10989 | 0.23213 | 0.57142 | -0.17440 | 0.41845 |
| V8 | -0.09536 | 0.23213 | 0.22707 | 0.23893 | 1.00000 | 0.27796 | 0.43691 | 0.99939 | 0.27876 | -0.05517 | -0.12836 |
| AGE | 0.22907 | 0.59039 | 0.52802 | 0.57865 | 0.27796 | 1.00000 | 0.11206 | 0.27306 | 0.99791 | -0.06689 | 0.43101 |
| EDUC | -0.29212 | 0.10138 | 0.10374 | 0.10989 | 0.43691 | 0.11206 | 1.00000 | 0.43148 | 0.08458 | -0.27470 | -0.54081 |
| SRV8 | -0.09685 | 0.22682 | 0.21902 | 0.23213 | 0.99939 | 0.27306 | 0.43148 | 1.00000 | 0.27402 | -0.04621 | -0.12344 |
| SRAGE | 0.23070 | 0.58227 | 0.52198 | 0.57142 | 0.27876 | 0.99791 | 0.08458 | 0.27402 | 1.00000 | -0.06152 | 0.43988 |
| SRUNEMP | 0.31234 | -0.19054 | -0.14275 | -0.17440 | -0.05517 | -0.06689 | -0.27470 | -0.04621 | -0.06152 | 1.00000 | 0.28012 |
| SRV13 | 0.49256 | 0.46002 | 0.35197 | 0.41845 | -0.12836 | 0.43101 | -0.54081 | -0.12344 | 0.43988 | 0.28012 | 1.00000 |
| SRPART | 0.94839 | 0.04531 | 0.07953 | 0.06198 | -0.13774 | 0.20743 | -0.35019 | -0.13869 | 0.21732 | 0.36502 | 0.47108 |
| LEDUC | -0.33524 | 0.07615 | 0.07272 | 0.08160 | 0.44312 | 0.02018 | 0.97778 | 0.44007 | -0.00409 | -0.26077 | -0.54776 |
| SREDUC | -0.31609 | 0.08955 | 0.08913 | 0.09662 | 0.44222 | 0.06468 | 0.99424 | 0.43794 | 0.03872 | -0.27031 | -0.54744 |
| UNEMP | 0.32583 | -0.08205 | -0.05836 | -0.07493 | -0.06702 | -0.00528 | -0.26680 | -0.05812 | -0.00120 | 0.97902 | 0.36568 |
| V13 | 0.50205 | 0.46306 | 0.35466 | 0.42133 | -0.12495 | 0.43680 | -0.52811 | -0.12010 | 0.44466 | 0.28915 | 0.99959 |
| LPART | 0.74190 | -0.07588 | -0.02533 | -0.05333 | -0.18031 | 0.10153 | -0.40834 | -0.17925 | 0.11929 | 0.40223 | 0.38668 |
| LV8 | -0.09867 | 0.22127 | 0.21066 | 0.22505 | 0.99752 | 0.26794 | 0.42580 | 0.99937 | 0.26803 | -0.03732 | -0.11860 |
| LAGE | 0.23142 | 0.57056 | 0.51266 | 0.56066 | 0.27783 | 0.99136 | 0.05782 | 0.27323 | 0.98776 | -0.05635 | 0.44543 |
| LUNEMP | 0.28712 | -0.28441 | -0.21755 | -0.26117 | -0.02745 | -0.12007 | -0.26036 | -0.01906 | -0.11390 | 0.97852 | 0.18479 |
| LV13 | 0.48277 | 0.45640 | 0.34879 | 0.41502 | -0.13168 | 0.42437 | -0.55344 | -0.12669 | 0.43426 | 0.27125 | 0.99959 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.94839 | -0.33524 | -0.31609 | 0.32583 | 0.50205 | 0.74190 | -0.09867 | 0.23142 | 0.28712 | 0.48277 |
| V7 | 0.04531 | 0.07615 | 0.08955 | -0.08205 | 0.46306 | -0.07588 | 0.22127 | 0.57056 | -0.28441 | 0.45640 |
| LDIST | 0.07953 | 0.07272 | 0.08913 | -0.05836 | 0.35466 | -0.02533 | 0.21066 | 0.51266 | -0.21755 | 0.34879 |
| SRDIST | 0.06198 | 0.08160 | 0.09662 | -0.07493 | 0.42133 | -0.05333 | 0.22505 | 0.56066 | -0.26117 | 0.41502 |
| V8 | -0.13774 | 0.44312 | 0.44222 | -0.06702 | -0.12495 | -0.18031 | 0.99752 | 0.27783 | -0.02745 | -0.13168 |
| AGE | 0.20743 | 0.02018 | 0.06468 | -0.00528 | 0.43680 | 0.10153 | 0.26794 | 0.99136 | -0.12007 | 0.42437 |
| EDUC | -0.35019 | 0.97778 | 0.99424 | -0.26680 | -0.52811 | -0.40834 | 0.42580 | 0.05782 | -0.26036 | -0.55344 |
| SRV8 | -0.13869 | 0.44007 | 0.43794 | -0.05812 | -0.12010 | -0.17925 | 0.99937 | 0.27323 | -0.01906 | -0.12669 |
| SRAGE | 0.21732 | -0.00409 | 0.03872 | -0.00120 | 0.44466 | 0.11929 | 0.26803 | 0.98776 | -0.11390 | 0.43426 |
| SRUNEMP | 0.36502 | -0.26077 | -0.27031 | 0.97902 | 0.28915 | 0.40223 | -0.03732 | -0.05635 | 0.97852 | 0.27125 |
| SRV13 | 0.47108 | -0.54776 | -0.54744 | 0.36568 | 0.99959 | 0.38668 | -0.11860 | 0.44543 | 0.18479 | 0.99959 |
| SRPART | 1.00000 | -0.39552 | -0.37625 | 0.36760 | 0.47809 | 0.90090 | -0.13980 | 0.22638 | 0.34931 | 0.46371 |
| LEDUC | -0.39552 | 1.00000 | 0.99458 | -0.25494 | -0.53742 | -0.45196 | 0.43682 | -0.02754 | -0.24644 | -0.55789 |
| SREDUC | -0.37625 | 0.99458 | 1.00000 | -0.26339 | -0.53691 | -0.43475 | 0.43342 | 0.01352 | -0.25585 | -0.55883 |
| UNEMP | 0.36760 | -0.25494 | -0.26339 | 1.00000 | 0.37659 | 0.38682 | -0.04926 | 0.00234 | 0.91909 | 0.35491 |
| V13 | 0.47809 | -0.53742 | -0.53691 | 0.37659 | 1.00000 | 0.39041 | -0.11532 | 0.44920 | 0.19205 | 0.99837 |
| LPART | 0.90090 | -0.45196 | -0.43475 | 0.38682 | 0.39041 | 1.00000 | -0.17831 | 0.13669 | 0.39870 | 0.38256 |
| LV8 | -0.13890 | 0.43682 | 0.43342 | -0.04926 | -0.11532 | -0.17831 | 1.00000 | 0.26838 | -0.01082 | -0.12178 |
| LAGE | 0.22638 | -0.02754 | 0.01352 | 0.00234 | 0.44920 | 0.13669 | 0.26838 | 1.00000 | -0.10761 | 0.44085 |
| LUNEMP | 0.34931 | -0.24644 | -0.25585 | 0.91909 | 0.19205 | 0.39870 | -0.01082 | -0.10761 | 1.00000 | 0.17773 |
| LV13 | 0.46371 | -0.55789 | -0.55883 | 0.35491 | 0.99837 | 0.38256 | -0.12178 | 0.44085 | 0.17773 | 1.00000 |

Pearson Correlations: University of British Columbia CCS Areas with Part-Time Enrollment

| | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.52857 | -0.78447 | -0.65525 | -0.30807 | 0.23041 | 0.04842 | 0.07781 | 0.06373 | -0.31259 | -0.34606 |
| V7 | -0.52857 | 1.00000 | 0.88119 | 0.97659 | 0.17915 | 0.06355 | -0.03303 | -0.06242 | -0.04816 | 0.30053 | 0.36275 |
| LDIST | -0.78447 | 0.88119 | 1.00000 | 0.96013 | 0.12956 | 0.03952 | -0.14101 | -0.17362 | -0.15822 | 0.33254 | 0.39108 |
| SRDIST | -0.65525 | 0.97659 | 0.96013 | 1.00000 | 0.16034 | 0.06077 | -0.08061 | -0.11264 | -0.09726 | 0.32572 | 0.39115 |
| V8 | -0.30807 | 0.17915 | 0.12956 | 0.16034 | 1.00000 | -0.27289 | 0.64165 | 0.62776 | 0.63551 | 0.46350 | 0.49427 |
| AGE | 0.23041 | 0.06355 | 0.03952 | 0.06077 | -0.27289 | 1.00000 | -0.32809 | -0.34681 | -0.33844 | -0.11679 | -0.06429 |
| EDUC | 0.04842 | -0.03303 | -0.14101 | -0.08061 | 0.64165 | -0.32809 | 1.00000 | 0.99171 | 0.98794 | -0.03175 | 0.00051 |
| LEDUC | 0.07781 | -0.06242 | -0.17362 | -0.11264 | 0.62776 | -0.34681 | 0.99171 | 1.00000 | 0.99791 | -0.02979 | 0.00013 |
| SREDUC | 0.06373 | -0.04816 | -0.15822 | -0.09726 | 0.63551 | -0.33844 | 0.98794 | 0.99791 | 1.00000 | -0.03117 | -0.00013 |
| UNEMP | -0.31259 | 0.30053 | 0.33254 | 0.32572 | 0.46350 | -0.11679 | -0.03175 | -0.02979 | -0.03117 | 1.00000 | 0.94672 |
| SRUNEMP | -0.34606 | 0.36275 | 0.39108 | 0.39115 | 0.49427 | -0.06429 | 0.00051 | 0.00013 | -0.00013 | 0.94672 | 1.00000 |
| V13 | 0.48013 | -0.15649 | -0.23472 | -0.19615 | -0.56118 | 0.40927 | -0.20470 | -0.16884 | -0.18692 | -0.39164 | -0.37577 |
| LFULL | 0.84266 | -0.59969 | -0.72726 | -0.67761 | -0.48869 | 0.23613 | -0.30903 | -0.27528 | -0.29237 | -0.28102 | -0.37116 |
| LV8 | -0.31235 | 0.17063 | 0.12441 | 0.15330 | 0.99766 | -0.28163 | 0.62432 | 0.61527 | 0.62057 | 0.47390 | 0.50710 |
| LAGE | 0.22812 | 0.05655 | 0.01719 | 0.04895 | -0.27596 | 0.98701 | -0.34369 | -0.36431 | -0.35500 | -0.15365 | -0.10599 |
| SRAGE | 0.22945 | 0.06084 | 0.02883 | 0.05458 | -0.27549 | 0.99665 | -0.33729 | -0.35707 | -0.34818 | -0.13604 | -0.08558 |
| LUNEMP | -0.39889 | 0.41571 | 0.43885 | 0.44671 | 0.50381 | -0.05829 | 0.02485 | 0.01527 | 0.01984 | 0.92487 | 0.93174 |
| LV13 | 0.47410 | -0.16404 | -0.23605 | -0.20077 | -0.57035 | 0.42004 | -0.22371 | -0.18668 | -0.20540 | -0.39773 | -0.37998 |
| SRFULL | 0.97140 | -0.57099 | -0.78145 | -0.68269 | -0.39615 | 0.23575 | -0.08917 | -0.05916 | -0.07391 | -0.32223 | -0.38441 |
| SRV8 | -0.31032 | 0.17501 | 0.12699 | 0.15689 | 0.99941 | -0.27766 | 0.63332 | 0.62186 | 0.62838 | 0.46913 | 0.50110 |
| SRV13 | 0.47715 | -0.16019 | -0.23534 | -0.19840 | -0.56587 | 0.41483 | -0.21426 | -0.17781 | -0.19621 | -0.39477 | -0.37794 |

| | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.48013 | 0.84266 | -0.31235 | 0.22812 | 0.22945 | -0.39889 | 0.47410 | 0.97140 | -0.31032 | 0.47715 |
| V7 | -0.15649 | -0.59969 | 0.17063 | 0.05655 | 0.06084 | 0.41571 | -0.16404 | -0.57099 | 0.17501 | -0.16019 |
| LDIST | -0.23472 | -0.72726 | 0.12441 | 0.01719 | 0.02883 | 0.43885 | -0.23605 | -0.78145 | 0.12699 | -0.23534 |
| SRDIST | -0.19615 | -0.67761 | 0.15330 | 0.04895 | 0.05458 | 0.44671 | -0.20077 | -0.68269 | 0.15689 | -0.19840 |
| V8 | -0.56118 | -0.48869 | 0.99766 | -0.27596 | -0.27549 | 0.50381 | -0.57035 | -0.39615 | 0.99941 | -0.56587 |
| AGE | 0.40927 | 0.23613 | -0.28163 | 0.98701 | 0.99665 | -0.05829 | 0.42004 | 0.23575 | -0.27766 | 0.41483 |
| EDUC | -0.20470 | -0.30903 | 0.62432 | -0.34369 | -0.33729 | 0.02485 | -0.22371 | -0.08917 | 0.63332 | -0.21426 |
| LEDUC | -0.16884 | -0.27528 | 0.61527 | -0.36431 | -0.35707 | 0.01527 | -0.18668 | -0.05916 | 0.62186 | -0.17781 |
| SREDUC | -0.18692 | -0.29237 | 0.62057 | -0.35500 | -0.34818 | 0.01984 | -0.20540 | -0.07391 | 0.62838 | -0.19621 |
| UNEMP | -0.39164 | -0.28102 | 0.47390 | -0.15365 | -0.13604 | 0.92487 | -0.39773 | -0.32223 | 0.46913 | -0.39477 |
| SRUNEMP | -0.37577 | -0.37116 | 0.50710 | -0.10599 | -0.08558 | 0.93174 | -0.37998 | -0.38441 | 0.50110 | -0.37794 |
| V13 | 1.00000 | 0.44049 | -0.56246 | 0.41747 | 0.41487 | -0.43782 | 0.99903 | 0.46157 | -0.56215 | 0.99975 |
| LFULL | 0.44049 | 1.00000 | -0.48800 | 0.24267 | 0.23947 | -0.41963 | 0.44676 | 0.93817 | -0.48861 | 0.44365 |
| LV8 | -0.56246 | -0.48800 | 1.00000 | -0.28611 | -0.28490 | 0.51634 | -0.57048 | -0.39864 | 0.99942 | -0.56657 |
| LAGE | 0.41747 | 0.24267 | -0.28611 | 1.00000 | 0.99682 | -0.10212 | 0.42865 | 0.23409 | -0.28139 | 0.42322 |
| SRAGE | 0.41487 | 0.23947 | -0.28490 | 0.99682 | 1.00000 | -0.08064 | 0.42588 | 0.23497 | -0.28055 | 0.42054 |
| LUNEMP | -0.43782 | -0.41963 | 0.51634 | -0.10212 | -0.08064 | 1.00000 | -0.44050 | -0.43517 | 0.51047 | -0.43920 |
| LV13 | 0.99903 | 0.44676 | -0.57048 | 0.42865 | 0.42588 | -0.44050 | 1.00000 | 0.46033 | -0.57075 | 0.99976 |
| SRFULL | 0.46157 | 0.93817 | -0.39864 | 0.23409 | 0.23497 | -0.43517 | 0.46033 | 1.00000 | -0.39758 | 0.46098 |
| SRV8 | -0.56215 | -0.48861 | 0.99942 | -0.28139 | -0.28055 | 0.51047 | -0.57075 | -0.39758 | 1.00000 | -0.56655 |
| SRV13 | 0.99975 | 0.44365 | -0.56657 | 0.42322 | 0.42054 | -0.43920 | 0.99976 | 0.46098 | -0.56655 | 1.00000 |

Pearson Correlations: University of Lethbridge CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.12572 | -0.24122 | -0.17562 | -0.65175 | -0.40388 | -0.30861 | -0.67333 | -0.45983 | -0.57581 | 0.46778 |
| V7 | -0.12572 | 1.00000 | 0.89871 | 0.98005 | 0.14023 | -0.23891 | 0.12086 | 0.12409 | -0.25969 | 0.29577 | -0.28199 |
| LDIST | -0.24122 | 0.89871 | 1.00000 | 0.96637 | 0.12053 | -0.16138 | 0.03178 | 0.10412 | -0.18955 | 0.24954 | -0.33895 |
| SRDIST | -0.17562 | 0.98005 | 0.96637 | 1.00000 | 0.14120 | -0.20454 | 0.09560 | 0.12399 | -0.23133 | 0.28244 | -0.32107 |
| V8 | -0.65175 | 0.14023 | 0.12053 | 0.14120 | 1.00000 | 0.26231 | 0.67447 | 0.99866 | 0.29638 | 0.69853 | -0.66630 |
| AGE | -0.40388 | -0.23891 | -0.16138 | -0.20454 | 0.26231 | 1.00000 | 0.03003 | 0.27739 | 0.99462 | 0.24711 | 0.07865 |
| EDUC | -0.30861 | 0.12086 | 0.03178 | 0.09560 | 0.67447 | 0.03003 | 1.00000 | 0.65693 | 0.04403 | 0.20930 | -0.24837 |
| SRV8 | -0.67333 | 0.12409 | 0.10412 | 0.12399 | 0.99866 | 0.27739 | 0.65693 | 1.00000 | 0.31405 | 0.71050 | -0.66376 |
| SRAGE | -0.45983 | -0.25969 | -0.18955 | -0.23133 | 0.29638 | 0.99462 | 0.04403 | 0.31405 | 1.00000 | 0.27028 | 0.05509 |
| SRUNEMP | -0.57581 | 0.29577 | 0.24954 | 0.28244 | 0.69853 | 0.24711 | 0.20930 | 0.71050 | 0.27028 | 1.00000 | -0.55463 |
| SRV13 | 0.46778 | -0.28199 | -0.33895 | -0.32107 | -0.66630 | 0.07865 | -0.24837 | -0.66376 | 0.05509 | -0.55463 | 1.00000 |
| SRPART | 0.94931 | -0.33626 | -0.44149 | -0.39050 | -0.71996 | -0.26124 | -0.45737 | -0.73075 | -0.30171 | -0.60877 | 0.54718 |
| LEDUC | -0.30748 | 0.10652 | -0.00203 | 0.07070 | 0.66258 | -0.01307 | 0.98989 | 0.64814 | 0.00303 | 0.21286 | -0.22987 |
| SREDUC | -0.30846 | 0.11411 | 0.01474 | 0.08340 | 0.67000 | 0.00856 | 0.99753 | 0.65395 | 0.02370 | 0.21131 | -0.23967 |
| UNEMP | -0.46716 | 0.43075 | 0.33738 | 0.39692 | 0.62132 | 0.02868 | 0.18926 | 0.62858 | 0.05394 | 0.93916 | -0.60750 |
| V13 | 0.46511 | -0.27840 | -0.33724 | -0.31836 | -0.66107 | 0.07897 | -0.24173 | -0.65663 | 0.05406 | -0.54787 | 0.99978 |
| LPART | 0.77907 | -0.47900 | -0.56100 | -0.53268 | -0.76694 | -0.14953 | -0.63667 | -0.76173 | -0.17042 | -0.57598 | 0.57786 |
| LV8 | -0.69425 | 0.10804 | 0.08620 | 0.10495 | 0.99458 | 0.29316 | 0.63771 | 0.99863 | 0.33248 | 0.71991 | -0.65843 |
| LAGE | -0.61503 | -0.27954 | -0.21466 | -0.25511 | 0.32770 | 0.97752 | 0.05627 | 0.34789 | 0.99408 | 0.28378 | 0.02797 |
| LUNEMP | -0.50290 | 0.44358 | 0.38512 | 0.43490 | 0.65226 | 0.04586 | 0.23690 | 0.65470 | 0.05995 | 0.88862 | -0.64191 |
| LV13 | 0.47028 | -0.28562 | -0.34067 | -0.32380 | -0.67117 | 0.08031 | -0.25474 | -0.66856 | 0.05612 | -0.56114 | 0.99979 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.94931 | -0.30748 | -0.30846 | -0.46716 | 0.46511 | 0.77907 | -0.69425 | -0.51503 | -0.50290 | 0.47028 |
| V7 | -0.33626 | 0.10652 | 0.11411 | 0.43075 | -0.27840 | -0.47900 | 0.10604 | -0.27954 | 0.44358 | -0.28562 |
| LDIST | -0.44149 | -0.00203 | 0.01474 | 0.33738 | -0.33724 | -0.58100 | 0.08620 | -0.21466 | 0.38512 | -0.34067 |
| SRDIST | -0.39050 | 0.07070 | 0.08340 | 0.39692 | -0.31836 | -0.53268 | 0.10495 | -0.25511 | 0.43490 | -0.32380 |
| V8 | -0.71996 | 0.66258 | 0.67000 | 0.62132 | -0.66107 | -0.76694 | 0.99458 | 0.32770 | 0.65226 | -0.67117 |
| AGE | -0.26124 | -0.01307 | 0.00856 | 0.02868 | 0.07897 | -0.14953 | 0.29316 | 0.97752 | 0.04586 | 0.08031 |
| EDUC | -0.45737 | 0.98989 | 0.99753 | 0.18926 | -0.24173 | -0.63667 | 0.63771 | 0.05627 | 0.23690 | -0.25474 |
| SRV8 | -0.73075 | 0.64814 | 0.65395 | 0.62858 | -0.65663 | -0.76173 | 0.99863 | 0.34789 | 0.65470 | -0.66856 |
| SRAGE | -0.30171 | 0.00303 | 0.02370 | 0.05394 | 0.05406 | -0.17042 | 0.33248 | 0.99408 | 0.05995 | 0.05612 |
| SRUNEMP | -0.60877 | 0.21286 | 0.21131 | 0.93916 | -0.54787 | -0.57598 | 0.71991 | 0.28378 | 0.88862 | -0.56114 |
| SRV13 | 0.54718 | -0.22987 | -0.23987 | -0.60750 | 0.99978 | 0.57786 | -0.65843 | 0.02797 | -0.64191 | 0.99978 |
| SRPART | 1.00000 | -0.45470 | -0.45672 | -0.52674 | 0.54331 | 0.92633 | -0.74012 | -0.34237 | -0.58788 | 0.55084 |
| LEDUC | -0.45470 | 1.00000 | 0.99739 | 0.17076 | -0.22298 | -0.61780 | 0.63188 | 0.01776 | 0.22969 | -0.23649 |
| SREDUC | -0.45672 | 0.99739 | 1.00000 | 0.17057 | -0.23287 | -0.62854 | 0.63614 | 0.03728 | 0.23404 | -0.24620 |
| UNEMP | -0.52674 | 0.17076 | 0.17057 | 1.00000 | -0.59974 | -0.52391 | 0.63313 | 0.08231 | 0.93116 | -0.61505 |
| V13 | 0.54331 | -0.22298 | -0.23287 | -0.59974 | 1.00000 | 0.57243 | -0.65338 | 0.02767 | -0.63749 | 0.99914 |
| LPART | 0.92633 | -0.61780 | -0.62854 | -0.52391 | 0.57243 | 1.00000 | -0.75460 | -0.19184 | -0.59671 | 0.58303 |
| LV8 | -0.74012 | 0.63188 | 0.63614 | 0.63313 | -0.65338 | -0.75460 | 1.00000 | 0.36894 | 0.65410 | -0.66313 |
| LAGE | -0.34237 | 0.01776 | 0.03728 | 0.08231 | 0.02767 | -0.19184 | 0.36894 | 1.00000 | 0.07654 | 0.02833 |
| LUNEMP | -0.58788 | 0.22969 | 0.23404 | 0.93116 | -0.63749 | -0.59671 | 0.65410 | 0.07654 | 1.00000 | -0.64617 |
| LV13 | 0.55084 | -0.23649 | -0.24620 | -0.61505 | 0.99914 | 0.58303 | -0.66313 | 0.02833 | -0.64617 | 1.00000 |

Pearson Correlations: University of Lethbridge CCS Areas with Part-Time Enrollment

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            FULL      V7        LDIST     SRDIST    V8        AGE       EDUC      LEDUC     SREDUC    UNEMP     SRUNEMP

FULL        1.00000  -0.26199  -0.42355  -0.33145  -0.14108   0.12257   0.20902   0.11476   0.16070  -0.30044  -0.28898

V7         -0.26199   1.00000   0.91067   0.98327  -0.08253  -0.04041  -0.02771  -0.02889  -0.02800   0.17237   0.13027
LDIST      -0.42355   0.91067   1.00000   0.96883  -0.14759   0.06021  -0.14801  -0.15084  -0.15011   0.20727   0.16122
SRDIST     -0.33145   0.98327   0.96883   1.00000  -0.11014   0.00595  -0.07574  -0.07802  -0.07691   0.19117   0.14680
V8         -0.14108  -0.08253  -0.14759  -0.11014   1.00000  -0.19730   0.56056   0.62270   0.59528   0.55058   0.56015
AGE         0.12257  -0.04041   0.06021   0.00595  -0.19730   1.00000  -0.06404  -0.14552  -0.10668  -0.32837  -0.29349
EDUC        0.20802  -0.02771  -0.14801  -0.07574   0.56056  -0.06404   1.00000   0.97671   0.99397   0.15896   0.16362
LEDUC       0.11476  -0.02889  -0.15084  -0.07802   0.62270  -0.14552   0.97671   1.00000   0.99430   0.20790   0.19933
SREDUC      0.16070  -0.02800  -0.15011  -0.07691   0.59528  -0.10668   0.99397   0.99430   1.00000   0.18414   0.18216
UNEMP      -0.30044   0.17237   0.20727   0.19117   0.55058  -0.32837   0.15896   0.20790   0.18414   1.00000   0.95214
SRUNEMP    -0.28898   0.13027   0.16122   0.14680   0.56015  -0.29349   0.16362   0.19933   0.18216   0.95214   1.00000
V13        -0.10449   0.02257   0.01728   0.01585  -0.41377   0.29180  -0.31713  -0.31196  -0.31581  -0.31874  -0.30819

LFULL       0.83814  -0.40304  -0.45101  -0.43238  -0.41725   0.17507  -0.12074  -0.20221  -0.16474  -0.42574  -0.42158
LV8        -0.16859  -0.11423  -0.16746  -0.13825   0.99495  -0.21001   0.53944   0.60834   0.57743   0.54752   0.56114
LAGE        0.12531  -0.05114   0.04921  -0.00500  -0.19068   0.99532  -0.07338  -0.15080  -0.11402  -0.32484  -0.29050
SRAGE       0.12387  -0.04604   0.05472   0.00033  -0.19441   0.99886  -0.06887  -0.14843  -0.11057  -0.32728  -0.29262
LUNEMP     -0.26344   0.20666   0.24214   0.22836   0.54373  -0.25524   0.19665   0.22844   0.21366   0.94775   0.95028
LV13       -0.11570   0.01221   0.01083   0.00699  -0.42197   0.27788  -0.33963  -0.32985  -0.33595  -0.32400  -0.31460
SRFULL      0.96502  -0.32317  -0.43679  -0.37645  -0.28727   0.14398   0.05532  -0.03520   0.00781  -0.37570  -0.36938

SRV8       -0.15532  -0.09781  -0.15709  -0.12368   0.99876  -0.20425   0.55060   0.61636   0.58708   0.55010   0.56163
SRV13      -0.10994   0.01721   0.01387   0.01122  -0.41812   0.28512  -0.32837  -0.32096  -0.32591  -0.32176  -0.31177


            V13       LFULL     LV8       LAGE      SRAGE     LUNEMP    LV13      SRFULL              SRV8      SRV13

FULL       -0.10449   0.83814  -0.16859   0.12531   0.12387  -0.26344  -0.11570   0.96502            -0.15532  -0.10994

V7          0.02257  -0.40304  -0.11423  -0.05114  -0.04604   0.20666   0.01221  -0.32317            -0.09781   0.01721
LDIST       0.01728  -0.45101  -0.16746   0.04921   0.05472   0.24214   0.01083  -0.43679            -0.15709   0.01387
SRDIST      0.01585  -0.43238  -0.13825  -0.00500   0.00033   0.22836   0.00699  -0.37645            -0.12368   0.01122
V8         -0.41377  -0.41725   0.99495  -0.19068  -0.19441   0.54373  -0.42197  -0.28727             0.99876  -0.41812
AGE         0.29180   0.17507  -0.21001   0.99532   0.99886  -0.25524   0.27788   0.14398            -0.20425   0.28512
EDUC       -0.31713  -0.12074   0.53944  -0.07338  -0.06887   0.19665  -0.33963   0.05532             0.55060  -0.32837
LEDUC      -0.31196  -0.20221   0.60834  -0.15080  -0.14843   0.22844  -0.32985  -0.03520             0.61636  -0.32096

SREDUC     -0.31581  -0.16474   0.57743  -0.11402  -0.11057   0.21366  -0.33595   0.00781             0.58708  -0.32591
UNEMP      -0.31874  -0.42574   0.54752  -0.32484  -0.32728   0.94775  -0.32400  -0.37570             0.55010  -0.32176
SRUNEMP    -0.30819  -0.42158   0.56114  -0.29050  -0.29262   0.95028  -0.31460  -0.36936             0.56163  -0.31177
V13         1.00000   0.06127  -0.39357   0.28857   0.29040  -0.31740   0.99745  -0.03412            -0.40454   0.99935

LFULL       0.06127   1.00000  -0.42868   0.18182   0.17851  -0.41136   0.05936   0.94791            -0.42381   0.06055
LV8        -0.39357  -0.42868   1.00000  -0.20188  -0.20637   0.53690  -0.39981  -0.30884             0.99872  -0.39692
LAGE        0.28857   0.18182  -0.20188   1.00000   0.99879  -0.25461   0.27730   0.14871            -0.19688   0.28322
SRAGE       0.29040   0.17851  -0.20637   0.99879   1.00000  -0.25542   0.27782   0.14632            -0.20099   0.28439
LUNEMP     -0.31740  -0.41136   0.53690  -0.25461  -0.25542   1.00000  -0.32517  -0.34816             0.54135  -0.32167
LV13        0.99745   0.05936  -0.39981   0.27730   0.27782  -0.32517   1.00000  -0.04061            -0.41176   0.99937
SRFULL     -0.03412   0.94791  -0.30884   0.14871   0.14632  -0.34816  -0.04061   1.00000            -0.29872  -0.03717

SRV8       -0.40454  -0.42381   0.99872  -0.19688  -0.20099   0.54135  -0.41176  -0.29872             1.00000  -0.40839
SRV13       0.99935   0.06055  -0.39692   0.28322   0.28439  -0.32167   0.99937  -0.03717            -0.40839   1.00000
```

Pearson Correlations: University of Calgary CCS Areas with Full-Time Enrollment

|  | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.49450 | -0.50448 | -0.51947 | -0.23990 | -0.11880 | -0.36160 | -0.24515 | -0.10923 | -0.01914 | 0.03867 |
| V7 | -0.49450 | 1.00000 | 0.87703 | 0.97516 | 0.37316 | 0.12488 | 0.42595 | 0.38196 | 0.11208 | 0.25540 | -0.45742 |
| LDIST | -0.50448 | 0.87703 | 1.00000 | 0.95936 | 0.07675 | 0.28196 | 0.10502 | 0.08822 | 0.26089 | 0.21220 | -0.22912 |
| SRDIST | -0.51947 | 0.97516 | 0.95936 | 1.00000 | 0.27007 | 0.22396 | 0.30492 | 0.28000 | 0.20663 | 0.24675 | -0.37521 |
| V8 | -0.23990 | 0.37316 | 0.07675 | 0.27007 | 1.00000 | -0.04978 | 0.90957 | 0.99925 | -0.04863 | 0.38469 | -0.55614 |
| AGE | -0.11880 | 0.12488 | 0.28196 | 0.22396 | -0.04978 | 1.00000 | -0.15529 | -0.08105 | 0.99874 | -0.22178 | 0.17603 |
| EDUC | -0.36160 | 0.42595 | 0.10502 | 0.30492 | 0.90957 | -0.15529 | 1.00000 | 0.91065 | -0.14978 | 0.29886 | -0.45105 |
| SRV8 | -0.24515 | 0.38196 | 0.08822 | 0.28000 | 0.99925 | -0.08105 | 0.91065 | 1.00000 | -0.06008 | 0.39064 | -0.55038 |
| SRAGE | -0.10923 | 0.11208 | 0.26089 | 0.20663 | -0.04863 | 0.99874 | -0.14978 | -0.06008 | 1.00000 | -0.24876 | 0.19600 |
| SRUNEMP | -0.01914 | 0.25540 | 0.21220 | 0.24675 | 0.38469 | -0.22178 | 0.29886 | 0.39064 | -0.24876 | 1.00000 | -0.35539 |
| SRV13 | 0.03867 | -0.45742 | -0.22912 | -0.37521 | -0.55614 | 0.17603 | -0.45105 | -0.55038 | 0.19600 | -0.35539 | 1.00000 |
| SRPART | 0.94475 | -0.66801 | -0.65906 | -0.68884 | -0.37024 | -0.05764 | -0.49267 | -0.37718 | -0.04487 | -0.13405 | 0.23730 |
| LEDUC | -0.38249 | 0.39282 | 0.08447 | 0.27432 | 0.89480 | -0.23288 | 0.88932 | 0.89954 | -0.22526 | 0.27635 | -0.40864 |
| SREDUC | -0.37361 | 0.41120 | 0.09573 | 0.29116 | 0.90479 | -0.19348 | 0.99747 | 0.90766 | -0.18697 | 0.28910 | -0.43123 |
| UNEMP | -0.04609 | 0.22581 | 0.18968 | 0.21689 | 0.35219 | -0.30066 | 0.29080 | 0.35924 | -0.32773 | 0.99032 | -0.33714 |
| V13 | 0.03591 | -0.45248 | -0.22586 | -0.37101 | -0.55099 | 0.17103 | -0.44569 | -0.54517 | 0.19097 | -0.35136 | 0.99990 |
| LPART | 0.76449 | -0.79881 | -0.73089 | -0.79493 | -0.51564 | 0.00781 | -0.62885 | -0.52192 | 0.02297 | -0.27787 | 0.45451 |
| LV8 | -0.24922 | 0.38914 | 0.09861 | 0.28848 | 0.99694 | -0.07259 | 0.91000 | 0.99922 | -0.07179 | 0.39590 | -0.54347 |
| LAGE | -0.09743 | 0.09827 | 0.23789 | 0.18770 | -0.04794 | 0.99480 | -0.14443 | -0.05956 | 0.99866 | -0.27568 | 0.21590 |
| LUNEMP | 0.00817 | 0.27747 | 0.22950 | 0.27014 | 0.40723 | -0.13824 | 0.29708 | 0.41251 | -0.16442 | 0.98848 | -0.35285 |
| LV13 | 0.04146 | -0.46232 | -0.23236 | -0.37938 | -0.56113 | 0.18107 | -0.45629 | -0.55643 | 0.20106 | -0.35940 | 0.99990 |

|  | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.94475 | -0.38249 | -0.37361 | -0.04609 | 0.03591 | 0.76449 | -0.24922 | -0.09743 | 0.00817 | 0.04146 |
| V7 | -0.66801 | 0.39282 | 0.41120 | 0.22581 | -0.45248 | -0.79881 | 0.38914 | 0.09827 | 0.27747 | -0.46232 |
| LDIST | -0.65906 | 0.08447 | 0.09573 | 0.18968 | -0.22586 | -0.73089 | 0.09861 | 0.23789 | 0.22950 | -0.23236 |
| SRDIST | -0.68884 | 0.27432 | 0.29116 | 0.21689 | -0.37101 | -0.79493 | 0.28848 | 0.18770 | 0.27014 | -0.37938 |
| V8 | -0.37024 | 0.89480 | 0.90479 | 0.35219 | -0.55099 | -0.51564 | 0.99694 | -0.04794 | 0.40723 | -0.56113 |
| AGE | -0.05764 | -0.23288 | -0.19348 | -0.30066 | 0.17103 | 0.00781 | -0.07259 | 0.99480 | -0.13824 | 0.18107 |
| EDUC | -0.49267 | 0.88932 | 0.99747 | 0.29080 | -0.44569 | -0.62885 | 0.91000 | -0.14443 | 0.29708 | -0.45629 |
| SRV8 | -0.37718 | 0.89954 | 0.90766 | 0.35924 | -0.54517 | -0.52192 | 0.99922 | -0.05956 | 0.41251 | -0.55643 |
| SRAGE | -0.04487 | -0.22526 | -0.18697 | -0.32773 | 0.19097 | 0.02297 | -0.07179 | 0.99866 | -0.16442 | 0.20106 |
| SRUNEMP | -0.13405 | 0.27635 | 0.28910 | 0.99032 | -0.35136 | -0.27787 | 0.39590 | -0.27568 | 0.98848 | -0.35940 |
| SRV13 | 0.23730 | -0.40864 | -0.43123 | -0.33714 | 0.99990 | 0.46451 | -0.54347 | 0.21590 | -0.35285 | 0.99990 |
| SRPART | 1.00000 | -0.50624 | -0.50126 | -0.14930 | 0.23379 | 0.92892 | -0.38267 | -0.02983 | -0.11463 | 0.24078 |
| LEDUC | -0.50624 | 1.00000 | 0.99717 | 0.27869 | -0.40305 | -0.62170 | 0.90271 | -0.21767 | 0.26546 | -0.41411 |
| SREDUC | -0.50126 | 0.99717 | 1.00000 | 0.28612 | -0.42573 | -0.62749 | 0.90887 | -0.18057 | 0.28287 | -0.43661 |
| UNEMP | -0.14930 | 0.27869 | 0.28612 | 1.00000 | -0.33295 | -0.27743 | 0.36557 | -0.35452 | 0.95820 | -0.34133 |
| V13 | 0.23379 | -0.40305 | -0.42573 | -0.33295 | 1.00000 | 0.45007 | -0.53820 | 0.21084 | -0.34902 | 0.99959 |
| LPART | 0.92892 | -0.62170 | -0.62749 | -0.27743 | 0.45007 | 1.00000 | -0.52849 | 0.03990 | -0.26913 | 0.45889 |
| LV8 | -0.38267 | 0.90271 | 0.90887 | 0.36557 | -0.53820 | -0.52849 | 1.00000 | -0.07140 | 0.41695 | -0.54856 |
| LAGE | -0.02983 | -0.21767 | -0.18057 | -0.35452 | 0.21084 | 0.03990 | -0.07140 | 1.00000 | -0.19077 | 0.22097 |
| LUNEMP | -0.11463 | 0.26546 | 0.28287 | 0.95820 | -0.34902 | -0.26913 | 0.41695 | -0.19077 | 1.00000 | -0.35665 |
| LV13 | 0.24078 | -0.41411 | -0.43661 | -0.34133 | 0.99959 | 0.45889 | -0.54856 | 0.22097 | -0.35665 | 1.00000 |

Pearson Correlations: University of Calgary CCS Areas with Part-Time Enrollment

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              FULL      V7        LDIST     SRDIST    V8        AGE       EDUC      LEDUC     SREDUC    UNEMP     SRUNEMP

FULL          1.00000  -0.28544  -0.36450  -0.33133  -0.26032  -0.04834  -0.25417  -0.32694  -0.29181  -0.22413  -0.21931
V7           -0.28544   1.00000   0.89936   0.97879   0.15681  -0.16737   0.15183   0.18004   0.16882   0.44108   0.32523
LDIST        -0.36450   0.89936   1.00000   0.96805   0.11247  -0.06307   0.11146   0.14846   0.13158   0.34975   0.22924
SRDIST       -0.33133   0.97879   0.96805   1.00000   0.15062  -0.12044   0.14936   0.18302   0.16869   0.41226   0.29039
V8           -0.26032   0.15681   0.11247   0.15062   1.00000  -0.26089   0.74794   0.78354   0.77091   0.43746   0.42404
AGE          -0.04834  -0.16737  -0.06307  -0.12044  -0.26089   1.00000  -0.19497  -0.23855  -0.22090  -0.23564  -0.15542
EDUC         -0.25417   0.15183   0.11146   0.14936   0.74794  -0.19497   1.00000   0.97528   0.99345   0.22206   0.20942
LEDUC        -0.32694   0.18004   0.14846   0.18302   0.78354  -0.23855   0.97528   1.00000   0.99406   0.25590   0.24153
SREDUC       -0.29181   0.16882   0.13158   0.16869   0.77091  -0.22090   0.99345   0.99406   1.00000   0.24110   0.22689
UNEMP        -0.22413   0.44108   0.34975   0.41226   0.43746  -0.23564   0.22206   0.25590   0.24110   1.00000   0.94930
SRUNEMP      -0.21931   0.32523   0.22924   0.29039   0.42404  -0.15542   0.20942   0.24153   0.22689   0.94930   1.00000
V13           0.22132  -0.16057  -0.06738  -0.12182  -0.45751   0.17324  -0.42070  -0.42068  -0.42207  -0.47304  -0.49085
LFULL         0.77349  -0.52043  -0.52479  -0.53904  -0.44590   0.26471  -0.41271  -0.48940  -0.45507  -0.49322  -0.44053
LV8          -0.29522   0.13449   0.10579   0.13446   0.99001  -0.23744   0.71714   0.76886   0.74766   0.43581   0.43616
LAGE         -0.16475  -0.13870  -0.06077  -0.10412  -0.30168   0.96208  -0.22142  -0.25386  -0.24182  -0.15512  -0.06072
SRAGE        -0.09983  -0.15681  -0.06307  -0.11486  -0.28189   0.99240  -0.20958  -0.24830  -0.23316  -0.20251  -0.11478
LUNEMP       -0.17240   0.36199   0.25727   0.32483   0.43514  -0.21623   0.21093   0.22497   0.21987   0.94728   0.92578
LV13          0.23403  -0.17774  -0.08326  -0.13917  -0.46733   0.17600  -0.44411  -0.43910  -0.44293  -0.48198  -0.49924
SRFULL        0.94483  -0.42797  -0.48031  -0.46607  -0.38102   0.12070  -0.35303  -0.43369  -0.39596  -0.36915  -0.33784
SRV8         -0.27981   0.14734   0.11046   0.14413   0.99759  -0.24934   0.73439   0.77809   0.76118   0.43863   0.43192
SRV13         0.22786  -0.16940  -0.07544  -0.13069  -0.46275   0.17434  -0.43254  -0.43009  -0.43267  -0.47797  -0.49554


              V13       LFULL     LV8       LAGE      SRAGE     LUNEMP    LV13      SRFULL              SRV8      SRV13

FULL          0.22132   0.77349  -0.29522  -0.16475  -0.09983  -0.17240   0.23403   0.94483            -0.27981   0.22796
V7           -0.16057  -0.52043   0.13449  -0.13870  -0.15681   0.36199  -0.17774  -0.42797             0.14734  -0.16940
LDIST        -0.06738  -0.52479   0.10579  -0.06077  -0.08307   0.25727  -0.08326  -0.48031             0.11046  -0.07544
SRDIST       -0.12182  -0.53904   0.13446  -0.10412  -0.11486   0.32483  -0.13917  -0.46607             0.14413  -0.13069
V8           -0.45751  -0.44590   0.99001  -0.30168  -0.28189   0.43514  -0.46733  -0.38102             0.99760  -0.46275
AGE           0.17324   0.26471  -0.23744   0.96208   0.99240  -0.21623   0.17600   0.12070            -0.24934   0.17434
EDUC         -0.42070  -0.41271   0.71714  -0.22142  -0.20958   0.21093  -0.44411  -0.35303             0.73439  -0.43254
LEDUC        -0.42068  -0.48940   0.76886  -0.25386  -0.24830   0.22497  -0.43910  -0.43369             0.77809  -0.43009
SREDUC       -0.42207  -0.45507   0.74766  -0.24182  -0.23316   0.21987  -0.44293  -0.39596             0.76118  -0.43267
UNEMP        -0.47304  -0.49322   0.43581  -0.15512  -0.20251   0.94728  -0.48198  -0.36915             0.43863  -0.47797
SRUNEMP      -0.49085  -0.44053   0.43616  -0.06072  -0.11478   0.92578  -0.49924  -0.33784             0.43192  -0.49554
V13           1.00000   0.39141  -0.45246   0.12054   0.15263  -0.46717   0.99760   0.31330            -0.45704   0.99939
LFULL         0.39141   1.00000  -0.46486   0.17516   0.22829  -0.41901   0.40694   0.93228            -0.45769   0.39964
LV8          -0.45246  -0.46486   1.00000  -0.26460  -0.25195   0.43017  -0.46125  -0.40947             0.99739  -0.45720
LAGE          0.12054   0.17516  -0.26460   1.00000   0.98826  -0.14492   0.12174   0.01492            -0.28314   0.12127
SRAGE         0.15263   0.22829  -0.25195   0.98826   1.00000  -0.18697   0.15420   0.07562            -0.26702   0.15360
LUNEMP       -0.46717  -0.41901   0.43017  -0.14492  -0.18697   1.00000  -0.47614  -0.30145             0.43470  -0.47157
LV13          0.99760   0.40694  -0.46125   0.12174   0.15420  -0.47614   1.00000   0.32828            -0.46635   0.99941
SRFULL        0.31330   0.93228  -0.40947   0.01492   0.07562  -0.30145   0.32828   1.00000            -0.39750   0.32118
SRV8         -0.45704  -0.45769   0.99739  -0.28314  -0.26702   0.43470  -0.46635  -0.39750             1.00000  -0.46204
SRV13         0.99939   0.39964  -0.45720   0.12127   0.15360  -0.47157   0.99941   0.32118            -0.46204   1.00000
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Pearson Correlations: University of Alberta CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | 0.10741 | 0.07860 | 0.09682 | -0.34367 | 0.10547 | -0.31408 | -0.33980 | 0.09788 | -0.06155 | 0.09233 |
| V7 | 0.10741 | 1.00000 | 0.88985 | 0.87667 | 0.27397 | -0.09443 | 0.26528 | 0.26523 | -0.09294 | 0.50760 | -0.37589 |
| LDIST | 0.07860 | 0.88985 | 1.00000 | 0.98499 | 0.11667 | 0.06808 | 0.13366 | 0.11571 | 0.06665 | 0.31891 | -0.23280 |
| SRDIST | 0.09682 | 0.87667 | 0.98499 | 1.00000 | 0.22130 | -0.01299 | 0.22859 | 0.21504 | -0.01301 | 0.43200 | -0.32695 |
| V8 | -0.34367 | 0.27397 | 0.11667 | 0.22130 | 1.00000 | -0.26921 | 0.82637 | 0.99553 | -0.27117 | 0.42095 | -0.47195 |
| AGE | 0.10547 | -0.09443 | 0.06808 | -0.01299 | -0.26921 | 1.00000 | -0.28718 | -0.25356 | 0.99827 | -0.29121 | 0.10956 |
| EDUC | -0.31408 | 0.26528 | 0.13366 | 0.22859 | 0.82637 | -0.28718 | 1.00000 | 0.79320 | -0.29287 | 0.32037 | -0.45383 |
| SRV8 | -0.33980 | 0.26523 | 0.11571 | 0.21504 | 0.99553 | -0.25356 | 0.79320 | 1.00000 | -0.25513 | 0.41252 | -0.46697 |
| SRAGE | 0.09788 | -0.09294 | 0.06665 | -0.01301 | -0.27117 | 0.99827 | -0.29287 | -0.25513 | 1.00000 | -0.27502 | 0.12058 |
| SRUNEMP | -0.06155 | 0.50760 | 0.31891 | 0.43200 | 0.42095 | -0.29121 | 0.32037 | 0.41252 | -0.27502 | 1.00000 | -0.27423 |
| SRV13 | 0.09233 | -0.37589 | -0.23280 | -0.32695 | -0.47195 | 0.10956 | -0.45383 | -0.46697 | 0.12058 | -0.27423 | 1.00000 |
| SRPART | 0.92027 | -0.08282 | -0.09029 | -0.08891 | -0.48973 | 0.28148 | -0.47117 | -0.48159 | 0.27511 | -0.20281 | 0.25292 |
| LEDUC | -0.35494 | 0.28875 | 0.17022 | 0.25869 | 0.84720 | -0.26591 | 0.98653 | 0.81835 | -0.27133 | 0.34774 | -0.45791 |
| SREDUC | -0.33489 | 0.27834 | 0.15260 | 0.24470 | 0.83972 | -0.27940 | 0.99668 | 0.80855 | -0.28497 | 0.33601 | -0.45743 |
| UNEMP | 0.03630 | 0.62850 | 0.42693 | 0.54754 | 0.34980 | -0.27924 | 0.26757 | 0.34102 | -0.26876 | 0.92763 | -0.31414 |
| V13 | 0.09518 | -0.37260 | -0.22813 | -0.32280 | -0.47646 | 0.11326 | -0.45368 | -0.47181 | 0.12376 | -0.27871 | 0.99975 |
| LPART | 0.65066 | -0.33136 | -0.30702 | -0.33073 | -0.59293 | 0.40584 | -0.62802 | -0.67808 | 0.40592 | -0.30438 | 0.44495 |
| LV8 | -0.32822 | 0.25064 | 0.11002 | 0.20301 | 0.97973 | -0.23561 | 0.74684 | 0.99422 | -0.23681 | 0.39472 | -0.45652 |
| LAGE | 0.09111 | -0.09044 | 0.06545 | -0.01240 | -0.27261 | 0.99307 | -0.29797 | -0.25621 | 0.99826 | -0.25826 | 0.13046 |
| LUNEMP | -0.00642 | 0.51020 | 0.32781 | 0.43859 | 0.36810 | -0.27989 | 0.29908 | 0.35350 | -0.27018 | 0.92483 | -0.31688 |
| LV13 | 0.08918 | -0.37882 | -0.23726 | -0.33078 | -0.46690 | 0.10561 | -0.45352 | -0.46159 | 0.11718 | -0.26927 | 0.99974 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.92027 | -0.35494 | -0.33489 | 0.03630 | 0.09518 | 0.65066 | -0.32822 | 0.09111 | -0.00642 | 0.08918 |
| V7 | -0.08282 | 0.28875 | 0.27834 | 0.62850 | -0.37260 | -0.33136 | 0.25064 | -0.09044 | 0.51020 | -0.37882 |
| LDIST | -0.09029 | 0.17022 | 0.15260 | 0.42693 | -0.22813 | -0.30702 | 0.11002 | 0.06545 | 0.32781 | -0.23726 |
| SRDIST | -0.08891 | 0.25869 | 0.24470 | 0.54754 | -0.32280 | -0.33073 | 0.20301 | -0.01240 | 0.43859 | -0.33078 |
| V8 | -0.48973 | 0.84720 | 0.83972 | 0.34980 | -0.47646 | -0.59293 | 0.97973 | -0.27261 | 0.36810 | -0.46690 |
| AGE | 0.28148 | -0.26591 | -0.27940 | -0.27924 | 0.11326 | 0.40584 | -0.23561 | 0.99307 | -0.27989 | 0.10561 |
| EDUC | -0.47117 | 0.98653 | 0.99668 | 0.26757 | -0.45368 | -0.62802 | 0.74684 | -0.29797 | 0.29908 | -0.45352 |
| SRV8 | -0.48159 | 0.81835 | 0.80855 | 0.34102 | -0.47181 | -0.67808 | 0.99422 | -0.25621 | 0.35350 | -0.46159 |
| SRAGE | 0.27511 | -0.27133 | -0.28497 | -0.26876 | 0.12376 | 0.40592 | -0.23681 | 0.99826 | -0.27018 | 0.11718 |
| SRUNEMP | -0.20281 | 0.34774 | 0.33601 | 0.92763 | -0.27871 | -0.30438 | 0.39472 | -0.25826 | 0.92483 | -0.26927 |
| SRV13 | 0.25292 | -0.45791 | -0.45743 | -0.31414 | 0.99975 | 0.44495 | -0.45652 | 0.13046 | -0.31688 | 0.99974 |
| SRPART | 1.00000 | -0.50654 | -0.49018 | -0.10105 | 0.25659 | 0.87978 | -0.46401 | 0.26886 | -0.15915 | 0.24881 |
| LEDUC | -0.50654 | 1.00000 | 0.99655 | 0.29537 | -0.45792 | -0.64293 | 0.77519 | -0.27630 | 0.31122 | -0.45744 |
| SREDUC | -0.49018 | 0.99655 | 1.00000 | 0.28351 | -0.45736 | -0.63788 | 0.76360 | -0.29001 | 0.30728 | -0.45704 |
| UNEMP | -0.10105 | 0.29537 | 0.28351 | 1.00000 | -0.31547 | -0.22045 | 0.32488 | -0.25729 | 0.91075 | -0.31237 |
| V13 | 0.25659 | -0.45792 | -0.45736 | -0.31547 | 1.00000 | 0.44648 | -0.46163 | 0.13313 | -0.31766 | 0.99897 |
| LPART | 0.87978 | -0.64293 | -0.63788 | -0.22045 | 0.44648 | 1.00000 | -0.55290 | 0.40535 | -0.28662 | 0.44289 |
| LV8 | -0.46401 | 0.77519 | 0.76360 | 0.32488 | -0.46163 | -0.55290 | 1.00000 | -0.23755 | 0.33079 | -0.45089 |
| LAGE | 0.26886 | -0.27630 | -0.29001 | -0.25729 | 0.13313 | 0.40535 | -0.23755 | 1.00000 | -0.25964 | 0.12758 |
| LUNEMP | -0.15915 | 0.31122 | 0.30728 | 0.91075 | -0.31766 | -0.28662 | 0.33079 | -0.25964 | 1.00000 | -0.31584 |
| LV13 | 0.24881 | -0.45744 | -0.45704 | -0.31237 | 0.99897 | 0.44289 | -0.45089 | 0.12758 | -0.31584 | 1.00000 |

Pearson Correlations: University of Alberta CCS Areas with Part-Time Enrollment

| | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.38713 | -0.35723 | -0.38362 | -0.28660 | -0.04378 | -0.15313 | -0.14229 | -0.14930 | 0.01843 | -0.05334 |
| V7 | -0.38713 | 1.00000 | 0.90149 | 0.97659 | 0.21088 | -0.08496 | 0.03921 | -0.00225 | 0.01841 | 0.00538 | 0.03806 |
| LDIST | -0.35723 | 0.90149 | 1.00000 | 0.97182 | 0.09751 | -0.13929 | -0.05828 | -0.07884 | -0.06856 | -0.02873 | -0.01362 |
| SRDIST | -0.38362 | 0.97659 | 0.97182 | 1.00000 | 0.16043 | -0.11605 | -0.00761 | -0.04215 | -0.02501 | -0.01287 | 0.01149 |
| V8 | -0.28660 | 0.21088 | 0.09751 | 0.16043 | 1.00000 | 0.02435 | 0.59707 | 0.56070 | 0.58372 | 0.10490 | 0.21440 |
| AGE | -0.04378 | -0.08496 | -0.13929 | -0.11605 | 0.02435 | 1.00000 | -0.03258 | -0.06820 | -0.04868 | 0.01752 | 0.01700 |
| EDUC | -0.15313 | 0.03921 | -0.05828 | -0.00761 | 0.59707 | -0.03258 | 1.00000 | 0.98435 | 0.99157 | 0.00493 | 0.07681 |
| LEDUC | -0.14228 | -0.00225 | -0.07884 | -0.04215 | 0.56070 | -0.06820 | 0.98435 | 1.00000 | 0.99028 | -0.01026 | 0.06169 |
| SREDUC | -0.14930 | 0.01841 | -0.06856 | -0.02501 | 0.58372 | -0.04868 | 0.99157 | 0.99028 | 1.00000 | -0.00395 | 0.06847 |
| UNEMP | 0.01843 | 0.00538 | -0.02873 | -0.01287 | 0.10490 | 0.01752 | 0.00493 | -0.01026 | -0.00395 | 1.00000 | 0.94402 |
| SRUNEMP | -0.05334 | 0.03806 | -0.01362 | 0.01149 | 0.21440 | 0.01700 | 0.07681 | 0.06169 | 0.06847 | 0.94402 | 1.00000 |
| V13 | -0.01905 | -0.04393 | -0.06081 | -0.05509 | -0.04986 | 0.20487 | -0.15200 | -0.12286 | -0.13970 | -0.07810 | -0.09001 |
| LFULL | 0.74682 | -0.58294 | -0.45644 | -0.63335 | -0.47362 | -0.01438 | -0.38803 | -0.32384 | -0.35829 | -0.03838 | -0.12385 |
| LV8 | -0.26075 | 0.16980 | 0.06737 | 0.12344 | 0.98527 | 0.01892 | 0.56562 | 0.54986 | 0.56244 | 0.10085 | 0.20377 |
| LAGE | -0.07356 | -0.08365 | -0.13513 | -0.11400 | 0.06183 | 0.97420 | -0.00254 | -0.03247 | -0.01566 | 0.03634 | 0.04751 |
| SRAGE | -0.05987 | -0.08438 | -0.13772 | -0.11532 | 0.04290 | 0.99429 | -0.01872 | -0.05205 | -0.03360 | 0.02646 | 0.03172 |
| LUNEMP | -0.01008 | 0.02592 | -0.01434 | 0.00523 | 0.14390 | 0.01687 | 0.03732 | 0.01493 | 0.02493 | 0.96602 | 0.95538 |
| LV13 | -0.03408 | -0.04144 | -0.05894 | -0.05263 | -0.04405 | 0.19948 | -0.15020 | -0.11883 | -0.13685 | -0.07276 | -0.08172 |
| SRFULL | 0.95830 | -0.49612 | -0.42767 | -0.47487 | -0.36909 | -0.02843 | -0.24866 | -0.22055 | -0.23684 | 0.00126 | -0.07819 |
| SRV8 | -0.27509 | 0.19053 | 0.08258 | 0.14211 | 0.99636 | 0.02210 | 0.58339 | 0.55745 | 0.57523 | 0.10302 | 0.20986 |
| SRV13 | -0.02663 | -0.04271 | -0.05993 | -0.05391 | -0.04708 | 0.20224 | -0.15137 | -0.12107 | -0.13862 | -0.07548 | -0.08597 |

| | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | -0.01905 | 0.74682 | -0.26075 | -0.07356 | -0.05987 | -0.01008 | -0.03408 | 0.95830 | -0.27509 | -0.02663 |
| V7 | -0.04383 | -0.58294 | 0.16980 | -0.08365 | -0.08438 | 0.02592 | -0.04144 | -0.49612 | 0.19053 | -0.04271 |
| LDIST | -0.06081 | -0.45644 | 0.06737 | -0.13513 | -0.13772 | -0.01434 | -0.05894 | -0.42767 | 0.08258 | -0.05993 |
| SRDIST | -0.05509 | -0.63336 | 0.12344 | -0.11400 | -0.11532 | 0.00523 | -0.05263 | -0.47487 | 0.14211 | -0.05391 |
| V8 | -0.04986 | -0.47362 | 0.98527 | 0.06183 | 0.04290 | 0.14390 | -0.04405 | -0.36909 | 0.99636 | -0.04708 |
| AGE | 0.20487 | -0.01438 | 0.01892 | 0.97420 | 0.99429 | 0.01687 | 0.19948 | -0.02843 | 0.02210 | 0.20224 |
| EDUC | -0.15200 | -0.38803 | 0.56562 | -0.00254 | -0.01872 | 0.03732 | -0.15020 | -0.24865 | 0.58339 | -0.15137 |
| LEDUC | -0.12285 | -0.32384 | 0.54986 | -0.03247 | -0.05205 | 0.01493 | -0.11883 | -0.22055 | 0.55745 | -0.12107 |
| SREDUC | -0.13970 | -0.35829 | 0.56244 | -0.01566 | -0.03360 | 0.02493 | -0.13685 | -0.23664 | 0.57523 | -0.13852 |
| UNEMP | -0.07810 | -0.03838 | 0.10085 | 0.03634 | 0.02646 | 0.96602 | -0.07276 | 0.00126 | 0.10302 | -0.07549 |
| SRUNEMP | -0.09001 | -0.12385 | 0.20377 | 0.04751 | 0.03172 | 0.95538 | -0.08172 | -0.07818 | 0.20986 | -0.08597 |
| V13 | 1.00000 | 0.05674 | -0.02913 | 0.16005 | 0.18468 | -0.08473 | 0.99773 | 0.00248 | -0.03986 | 0.99943 |
| LFULL | 0.05674 | 1.00000 | -0.41334 | -0.04696 | -0.03116 | -0.07694 | 0.04840 | 0.89434 | -0.44461 | 0.05263 |
| LV8 | -0.02913 | -0.41334 | 1.00000 | 0.05268 | 0.03546 | 0.13183 | -0.02330 | -0.33019 | 0.99624 | -0.02632 |
| LAGE | 0.16005 | -0.04696 | 0.05268 | 1.00000 | 0.99260 | 0.03877 | 0.15584 | -0.06132 | 0.05792 | 0.15789 |
| SRAGE | 0.18468 | -0.03116 | 0.03546 | 0.99260 | 1.00000 | 0.02732 | 0.17989 | -0.04573 | 0.03874 | 0.18234 |
| LUNEMP | -0.08473 | -0.07694 | 0.13183 | 0.03877 | 0.02732 | 1.00000 | -0.07961 | -0.03000 | 0.13817 | -0.08226 |
| LV13 | 0.99773 | 0.04840 | -0.02330 | 0.15584 | 0.17989 | -0.07961 | 1.00000 | -0.01080 | -0.03398 | 0.99943 |
| SRFULL | 0.00248 | 0.89434 | -0.33019 | -0.06132 | -0.04573 | -0.03000 | -0.01080 | 1.00000 | -0.35101 | -0.00419 |
| SRV8 | -0.03986 | -0.44461 | 0.99624 | 0.05792 | 0.03874 | 0.13817 | -0.03398 | -0.35101 | 1.00000 | -0.03704 |
| SRV13 | 0.99943 | 0.05263 | -0.02632 | 0.15789 | 0.18234 | -0.08226 | 0.99943 | -0.00419 | -0.03704 | 1.00000 |

Pearson Correlations: University of Saskatchewan CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.21071 | -0.16105 | -0.19568 | -0.25869 | 0.21797 | -0.19337 | -0.25161 | 0.20036 | -0.10813 | 0.07028 |
| V7 | -0.21071 | 1.00000 | 0.90114 | 0.97791 | 0.33483 | -0.10145 | 0.22227 | 0.32000 | -0.09912 | 0.13513 | -0.12917 |
| LDIST | -0.16105 | 0.90114 | 1.00000 | 0.96999 | 0.19808 | -0.11130 | 0.03155 | 0.19035 | -0.11332 | 0.07351 | -0.06569 |
| SRDIST | -0.19568 | 0.97791 | 0.96999 | 1.00000 | 0.28003 | -0.11139 | 0.14234 | 0.26794 | -0.11134 | 0.10830 | -0.10394 |
| V8 | -0.25869 | 0.33483 | 0.19808 | 0.28003 | 1.00000 | 0.03968 | 0.72200 | 0.99660 | 0.06174 | 0.31265 | -0.27272 |
| AGE | 0.21797 | -0.10145 | -0.11130 | -0.11139 | 0.03968 | 1.00000 | 0.01933 | 0.03470 | 0.99567 | 0.01408 | 0.14222 |
| EDUC | -0.19337 | 0.22227 | 0.03155 | 0.14234 | 0.72200 | 0.01933 | 1.00000 | 0.69474 | 0.03652 | 0.10740 | -0.38735 |
| SRV8 | -0.25161 | 0.32000 | 0.19035 | 0.26794 | 0.99660 | 0.03470 | 0.69474 | 1.00000 | 0.05585 | 0.31196 | -0.26127 |
| SRAGE | 0.20036 | -0.09912 | -0.11332 | -0.11134 | 0.06174 | 0.99567 | 0.03652 | 0.05585 | 1.00000 | 0.02376 | 0.12554 |
| SRUNEMP | -0.10813 | 0.13513 | 0.07351 | 0.10830 | 0.31265 | 0.01408 | 0.10740 | 0.31196 | 0.02376 | 1.00000 | -0.06332 |
| SRV13 | 0.07028 | -0.12917 | -0.06569 | -0.10394 | -0.27272 | 0.14222 | -0.38735 | -0.26127 | 0.12554 | -0.06332 | 1.00000 |
| SRPART | 0.91791 | -0.36581 | -0.27897 | -0.33503 | -0.45124 | 0.19136 | -0.33636 | -0.43473 | 0.16436 | -0.16205 | 0.21695 |
| LEDUC | -0.18794 | 0.18869 | 0.02104 | 0.11616 | 0.70391 | -0.01145 | 0.97356 | 0.68703 | 0.00612 | 0.09334 | -0.38487 |
| SREDUC | -0.19265 | 0.20733 | 0.02720 | 0.13065 | 0.71752 | 0.00528 | 0.99335 | 0.69539 | 0.02272 | 0.10056 | -0.38936 |
| UNEMP | -0.05250 | 0.11078 | 0.06287 | 0.08873 | 0.19380 | -0.00983 | 0.03315 | 0.19441 | -0.00813 | 0.94448 | -0.03332 |
| V13 | 0.08021 | -0.12878 | -0.06518 | -0.10350 | -0.27416 | 0.14373 | -0.38402 | -0.26297 | 0.12697 | -0.06597 | 0.99958 |
| LPART | 0.58870 | -0.55674 | -0.41546 | -0.50128 | -0.65952 | 0.08336 | -0.56463 | -0.62468 | 0.05513 | -0.21603 | 0.30912 |
| LV8 | -0.24060 | 0.30303 | 0.18133 | 0.25405 | 0.98600 | 0.02916 | 0.66267 | 0.99635 | 0.04909 | 0.30805 | -0.24813 |
| LAGE | 0.18063 | -0.09483 | -0.11303 | -0.10908 | 0.08321 | 0.98244 | 0.05145 | 0.07656 | 0.99548 | 0.03405 | 0.10757 |
| LUNEMP | -0.03898 | 0.12707 | 0.07736 | 0.10593 | 0.19400 | 0.00897 | 0.07202 | 0.18852 | 0.01088 | 0.92686 | -0.03563 |
| LV13 | 0.05990 | -0.12933 | -0.06608 | -0.10420 | -0.27081 | 0.14053 | -0.39016 | -0.25910 | 0.12397 | -0.06044 | 0.99958 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.91791 | -0.18794 | -0.19265 | -0.05250 | 0.08021 | 0.58870 | -0.24060 | 0.18063 | -0.03898 | 0.05990 |
| V7 | -0.36581 | 0.18869 | 0.20733 | 0.11078 | -0.12878 | -0.55674 | 0.30303 | -0.09483 | 0.12707 | -0.12933 |
| LDIST | -0.27897 | 0.02104 | 0.02720 | 0.06287 | -0.06518 | -0.41546 | 0.18133 | -0.11303 | 0.07736 | -0.06608 |
| SRDIST | -0.33503 | 0.11616 | 0.13065 | 0.08873 | -0.10350 | -0.50128 | 0.25405 | -0.10908 | 0.10693 | -0.10420 |
| V8 | -0.45124 | 0.70391 | 0.71752 | 0.19380 | -0.27416 | -0.65952 | 0.98600 | 0.08321 | 0.19400 | -0.27081 |
| AGE | 0.19136 | -0.01145 | 0.00528 | -0.00983 | 0.14373 | 0.08336 | 0.02916 | 0.98244 | 0.00897 | 0.14053 |
| EDUC | -0.33636 | 0.97356 | 0.99335 | 0.03315 | -0.38402 | -0.56463 | 0.66267 | 0.05145 | 0.07202 | -0.39016 |
| SRV8 | -0.43473 | 0.68703 | 0.69539 | 0.19441 | -0.26297 | -0.62468 | 0.99635 | 0.07656 | 0.18852 | -0.25910 |
| SRAGE | 0.16436 | 0.00612 | 0.02272 | -0.00813 | 0.12697 | 0.05513 | 0.04909 | 0.99548 | 0.01088 | 0.12397 |
| SRUNEMP | -0.16205 | 0.09334 | 0.10056 | 0.94448 | -0.06597 | -0.21603 | 0.30805 | 0.03405 | 0.92686 | -0.06044 |
| SRV13 | 0.21695 | -0.38487 | -0.38936 | -0.03332 | 0.99958 | 0.30912 | -0.24813 | 0.10757 | -0.03563 | 0.99958 |
| SRPART | 1.00000 | -0.31624 | -0.32917 | -0.05942 | 0.22587 | 0.83276 | -0.41283 | 0.13576 | -0.04997 | 0.20752 |
| LEDUC | -0.31624 | 1.00000 | 0.99333 | 0.01942 | -0.38185 | -0.50172 | 0.66442 | 0.02126 | 0.04573 | -0.38738 |
| SREDUC | -0.32917 | 0.99333 | 1.00000 | 0.02576 | -0.38617 | -0.53682 | 0.66795 | 0.03781 | 0.05878 | -0.39202 |
| UNEMP | -0.05942 | 0.01942 | 0.02576 | 1.00000 | -0.03560 | -0.09859 | 0.19331 | -0.00561 | 0.96771 | -0.03092 |
| V13 | 0.22587 | -0.38185 | -0.38617 | -0.03560 | 1.00000 | 0.31273 | -0.26003 | 0.10890 | -0.03641 | 0.99833 |
| LPART | 0.83276 | -0.50172 | -0.53682 | -0.09859 | 0.31273 | 1.00000 | -0.58439 | 0.02651 | -0.11103 | 0.30502 |
| LV8 | -0.41283 | 0.66442 | 0.66795 | 0.19331 | -0.26003 | -0.58439 | 1.00000 | 0.06873 | 0.18350 | -0.24577 |
| LAGE | 0.13576 | 0.02126 | 0.03781 | -0.00561 | 0.10890 | 0.02651 | 0.06873 | 1.00000 | 0.01347 | 0.10613 |
| LUNEMP | -0.04997 | 0.04573 | 0.05878 | 0.96771 | -0.03641 | -0.11103 | 0.18350 | 0.01347 | 1.00000 | -0.03472 |
| LV13 | 0.20752 | -0.38738 | -0.39202 | -0.03092 | 0.99833 | 0.30502 | -0.24577 | 0.10613 | -0.03472 | 1.00000 |

Pearson Correlations: University of Saskatchewan CCS Areas with Part-Time Enrollment

| | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.31596 | -0.25692 | -0.30001 | -0.40138 | -0.13119 | -0.20889 | -0.21042 | -0.21241 | -0.23448 | -0.30763 |
| V7 | -0.31596 | 1.00000 | 0.88179 | 0.97344 | 0.47081 | 0.13672 | 0.24800 | 0.20955 | 0.23304 | 0.12578 | 0.16723 |
| LDIST | -0.25692 | 0.88179 | 1.00000 | 0.96483 | 0.27117 | 0.15610 | 0.01843 | 0.00012 | 0.01138 | 0.11973 | 0.13143 |
| SRDIST | -0.30001 | 0.97344 | 0.96483 | 1.00000 | 0.39371 | 0.15391 | 0.14329 | 0.11326 | 0.13167 | 0.12759 | 0.15708 |
| V8 | -0.40138 | 0.47081 | 0.27117 | 0.39371 | 1.00000 | 0.10556 | 0.56180 | 0.52829 | 0.55277 | 0.21760 | 0.33114 |
| AGE | -0.13119 | 0.13672 | 0.15610 | 0.15391 | 0.10556 | 1.00000 | -0.00120 | -0.03683 | -0.01727 | -0.00405 | 0.02427 |
| EDUC | -0.20889 | 0.24800 | 0.01843 | 0.14329 | 0.56180 | -0.00120 | 1.00000 | 0.96329 | 0.99083 | 0.05318 | 0.14232 |
| LEDUC | -0.21042 | 0.20955 | 0.00012 | 0.11326 | 0.52829 | -0.03683 | 0.96329 | 1.00000 | 0.99061 | -0.00502 | 0.09716 |
| SREDUC | -0.21241 | 0.23304 | 0.01138 | 0.13167 | 0.55277 | -0.01727 | 0.99083 | 0.98061 | 1.00000 | 0.02438 | 0.12095 |
| UNEMP | -0.23448 | 0.12578 | 0.11973 | 0.12759 | 0.21760 | -0.00405 | 0.05318 | -0.00502 | 0.02438 | 1.00000 | 0.96986 |
| SRUNEMP | -0.30763 | 0.16723 | 0.13143 | 0.15708 | 0.33114 | 0.02427 | 0.14232 | 0.09716 | 0.12095 | 0.96986 | 1.00000 |
| V13 | 0.26089 | 0.02350 | 0.05808 | 0.04415 | -0.17760 | 0.01127 | -0.21008 | -0.22059 | -0.21865 | -0.30019 | -0.33006 |
| LFULL | 0.68119 | -0.71191 | -0.50829 | -0.63145 | -0.68396 | -0.09948 | -0.51671 | -0.47748 | -0.50313 | -0.24123 | -0.33407 |
| LV8 | -0.40613 | 0.40727 | 0.23170 | 0.34040 | 0.98507 | 0.07415 | 0.50279 | 0.47982 | 0.49832 | 0.21157 | 0.32074 |
| LAGE | -0.20041 | 0.15106 | 0.15132 | 0.15964 | 0.14118 | 0.97654 | 0.05896 | 0.04246 | 0.05250 | -0.00684 | 0.03323 |
| SRAGE | -0.16549 | 0.14548 | 0.15532 | 0.15845 | 0.12541 | 0.99446 | 0.02987 | 0.00332 | 0.01828 | -0.00431 | 0.02974 |
| LUNEMP | -0.23167 | 0.14405 | 0.12729 | 0.13981 | 0.23107 | -0.00674 | 0.09203 | 0.03212 | 0.06268 | 0.98456 | 0.96017 |
| LV13 | 0.25306 | 0.02317 | 0.05706 | 0.04373 | -0.16944 | 0.01795 | -0.21094 | -0.22286 | -0.22025 | -0.28704 | -0.31556 |
| SRFULL | 0.94962 | -0.49306 | -0.38291 | -0.45659 | -0.54357 | -0.11798 | -0.33288 | -0.33025 | -0.33566 | -0.25868 | -0.35138 |
| SRV8 | -0.40501 | 0.44042 | 0.25259 | 0.36844 | 0.99633 | 0.09109 | 0.53421 | 0.50619 | 0.52760 | 0.21519 | 0.32722 |
| SRV13 | 0.25710 | 0.02328 | 0.05753 | 0.04390 | -0.17386 | 0.01453 | -0.21070 | -0.22193 | -0.21965 | -0.29384 | -0.32305 |

| | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.26089 | 0.68119 | -0.40613 | -0.20041 | -0.16549 | -0.23167 | 0.25306 | 0.94962 | -0.40501 | 0.25710 |
| V7 | 0.02350 | -0.71191 | 0.40727 | 0.15106 | 0.14548 | 0.14405 | 0.02317 | -0.49306 | 0.44042 | 0.02328 |
| LDIST | 0.05808 | -0.50829 | 0.23170 | 0.15132 | 0.15532 | 0.12729 | 0.05706 | -0.38291 | 0.25259 | 0.05753 |
| SRDIST | 0.04415 | -0.63145 | 0.34040 | 0.15964 | 0.15845 | 0.13981 | 0.04373 | -0.45659 | 0.36844 | 0.04390 |
| V8 | -0.17780 | -0.68396 | 0.98507 | 0.14118 | 0.12541 | 0.23107 | -0.16944 | -0.54357 | 0.99633 | -0.17386 |
| AGE | 0.01127 | -0.09948 | 0.07415 | 0.97654 | 0.99445 | -0.00874 | 0.01795 | -0.11798 | 0.09109 | 0.01453 |
| EDUC | -0.21008 | -0.51671 | 0.50279 | 0.05886 | 0.02987 | 0.09203 | -0.21094 | -0.33288 | 0.53421 | -0.21070 |
| LEDUC | -0.22059 | -0.47748 | 0.47982 | 0.04246 | 0.00332 | 0.03212 | -0.22286 | -0.33025 | 0.50619 | -0.22193 |
| SREDUC | -0.21865 | -0.50313 | 0.49832 | 0.05250 | 0.01828 | 0.06268 | -0.22025 | -0.33566 | 0.52760 | -0.21965 |
| UNEMP | -0.30019 | -0.24123 | 0.21157 | -0.00684 | -0.00431 | 0.98456 | -0.28704 | -0.25868 | 0.21519 | -0.29384 |
| SRUNEMP | -0.33006 | -0.33407 | 0.32074 | 0.03323 | 0.02974 | 0.96017 | -0.31556 | -0.35138 | 0.32722 | -0.32305 |
| V13 | 1.00000 | 0.26031 | -0.14584 | -0.01264 | 0.00011 | -0.31152 | 0.99857 | 0.27245 | -0.16238 | 0.99965 |
| LFULL | 0.26031 | 1.00000 | -0.61539 | -0.14942 | -0.12549 | -0.26535 | 0.25353 | 0.85753 | -0.65142 | 0.25711 |
| LV8 | -0.14584 | -0.61539 | 1.00000 | 0.10941 | 0.09357 | 0.22034 | -0.13777 | -0.52437 | 0.99617 | -0.14202 |
| LAGE | -0.01264 | -0.14942 | 0.10941 | 1.00000 | 0.99371 | -0.00715 | -0.00474 | -0.18480 | 0.12674 | -0.00878 |
| SRAGE | 0.00011 | -0.12549 | 0.09357 | 0.99371 | 1.00000 | -0.00635 | 0.00743 | -0.15175 | 0.11085 | 0.00368 |
| LUNEMP | -0.31152 | -0.26535 | 0.22034 | -0.00715 | -0.00635 | 1.00000 | -0.29948 | -0.26483 | 0.22628 | -0.30573 |
| LV13 | 0.99857 | 0.25353 | -0.13777 | -0.00474 | 0.00743 | -0.29948 | 1.00000 | 0.26348 | -0.15409 | 0.99964 |
| SRFULL | 0.27245 | 0.85753 | -0.52437 | -0.18480 | -0.15175 | -0.26483 | 0.26348 | 1.00000 | -0.53679 | 0.26812 |
| SRV8 | -0.16238 | -0.65142 | 0.99617 | 0.12674 | 0.11085 | 0.22628 | -0.15409 | -0.53679 | 1.00000 | -0.15846 |
| SRV13 | 0.99965 | 0.25711 | -0.14202 | -0.00878 | 0.00368 | -0.30573 | 0.99864 | 0.26812 | -0.15846 | 1.00000 |

Pearson Correlations: University of Regina CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.00785 | 0.06599 | 0.02738 | -0.49791 | -0.28848 | -0.34010 | -0.50149 | -0.34241 | -0.47913 | 0.33477 |
| V7 | -0.00785 | 1.00000 | 0.91924 | 0.98293 | 0.16469 | 0.26186 | 0.08760 | 0.17371 | 0.24101 | 0.02141 | -0.05704 |
| LDIST | 0.06599 | 0.91924 | 1.00000 | 0.97520 | -0.00845 | 0.16942 | -0.08513 | 0.00634 | 0.15193 | -0.01931 | -0.04180 |
| SRDIST | 0.02738 | 0.98293 | 0.97520 | 1.00000 | 0.09338 | 0.22446 | 0.01335 | 0.10457 | 0.20547 | 0.00610 | -0.05607 |
| V8 | -0.49791 | 0.16469 | -0.00845 | 0.09336 | 1.00000 | 0.23191 | 0.54772 | 0.99671 | 0.24958 | 0.45550 | -0.19033 |
| AGE | -0.28848 | 0.26186 | 0.16942 | 0.22446 | 0.23191 | 1.00000 | 0.35690 | 0.22047 | 0.98980 | 0.11800 | -0.07806 |
| EDUC | -0.34010 | 0.08760 | -0.08513 | 0.01335 | 0.54772 | 0.35690 | 1.00000 | 0.51402 | 0.37265 | 0.18624 | -0.11075 |
| SRV8 | -0.50149 | 0.17371 | 0.00634 | 0.10457 | 0.99671 | 0.22047 | 0.51402 | 1.00000 | 0.23697 | 0.44690 | -0.19081 |
| SRAGE | -0.34241 | 0.24101 | 0.15193 | 0.20547 | 0.24958 | 0.98980 | 0.37265 | 0.23697 | 1.00000 | 0.14043 | -0.11354 |
| SRUNEMP | -0.47913 | 0.02141 | -0.01931 | 0.00610 | 0.45550 | 0.11800 | 0.18524 | 0.44680 | 0.14043 | 1.00000 | -0.34608 |
| SRV13 | 0.33477 | -0.05704 | -0.04180 | -0.05607 | -0.19033 | -0.07806 | -0.11075 | -0.19081 | -0.11354 | -0.34608 | 1.00000 |
| SRPART | 0.96346 | -0.04822 | 0.02582 | -0.01346 | -0.57902 | -0.23306 | -0.41793 | -0.57625 | -0.30255 | -0.52454 | 0.32523 |
| LEDUC | -0.38574 | 0.08346 | -0.07087 | 0.01582 | 0.49744 | 0.36999 | 0.97067 | 0.47056 | 0.39570 | 0.15443 | -0.10348 |
| SREDUC | -0.36406 | 0.08775 | -0.07715 | 0.01627 | 0.52620 | 0.36614 | 0.99244 | 0.49572 | 0.38677 | 0.17203 | -0.10782 |
| UNEMP | -0.37431 | 0.00890 | 0.00264 | 0.00828 | 0.36898 | 0.07676 | 0.09098 | 0.36144 | 0.08767 | 0.96579 | -0.34184 |
| V13 | 0.34130 | -0.05911 | -0.04254 | -0.05753 | -0.19899 | -0.08413 | -0.11679 | -0.19950 | -0.11948 | -0.35669 | 0.99955 |
| LPART | 0.78767 | -0.13452 | -0.06813 | -0.10552 | -0.61708 | -0.19710 | -0.53808 | -0.60319 | -0.24912 | -0.50004 | 0.26080 |
| LV8 | -0.50186 | 0.17877 | 0.01864 | 0.11237 | 0.98625 | 0.20546 | 0.47564 | 0.99638 | 0.22047 | 0.43509 | -0.19202 |
| LAGE | -0.41214 | 0.21807 | 0.13256 | 0.18420 | 0.25850 | 0.95952 | 0.38031 | 0.24538 | 0.98973 | 0.15474 | -0.14465 |
| LUNEMP | -0.32697 | 0.00146 | 0.02314 | 0.01497 | 0.33229 | 0.08273 | 0.09716 | 0.32139 | 0.09086 | 0.91949 | -0.35301 |
| LV13 | 0.32781 | -0.05504 | -0.04116 | -0.06469 | -0.18131 | -0.07195 | -0.10432 | -0.18179 | -0.10753 | -0.33464 | 0.99952 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.96346 | -0.38574 | -0.36406 | -0.37431 | 0.34130 | 0.78767 | -0.50186 | -0.41214 | -0.32697 | 0.32781 |
| V7 | -0.04822 | 0.08346 | 0.08776 | 0.00890 | -0.05911 | -0.13452 | 0.17877 | 0.21807 | 0.00146 | -0.05504 |
| LDIST | 0.02682 | -0.07087 | -0.07715 | 0.00254 | -0.04254 | -0.06813 | 0.01864 | 0.13256 | 0.02314 | -0.04116 |
| SRDIST | -0.01346 | 0.01592 | 0.01627 | 0.00828 | -0.05753 | -0.10552 | 0.11237 | 0.18420 | 0.01497 | -0.05469 |
| V8 | -0.57902 | 0.49744 | 0.52620 | 0.36898 | -0.19899 | -0.61709 | 0.98625 | 0.25850 | 0.33229 | -0.18131 |
| AGE | -0.23306 | 0.36999 | 0.36614 | 0.07676 | -0.08413 | -0.19710 | 0.20546 | 0.95952 | 0.08273 | -0.07195 |
| EDUC | -0.41793 | 0.97067 | 0.99244 | 0.09098 | -0.11679 | -0.53808 | 0.47654 | 0.38031 | 0.09716 | -0.10432 |
| SRV8 | -0.57625 | 0.47056 | 0.49572 | 0.36144 | -0.19950 | -0.60319 | 0.99638 | 0.24538 | 0.32139 | -0.18179 |
| SRAGE | -0.30255 | 0.39570 | 0.38677 | 0.08767 | -0.11948 | -0.24912 | 0.22047 | 0.98973 | 0.09086 | -0.10753 |
| SRUNEMP | -0.52454 | 0.15443 | 0.17203 | 0.96579 | -0.35669 | -0.50004 | 0.43509 | 0.15474 | 0.91949 | -0.33464 |
| SRV13 | 0.32523 | -0.10348 | -0.10782 | -0.34184 | 0.99955 | 0.26080 | -0.19202 | -0.14465 | -0.35301 | 0.99952 |
| SRPART | 1.00000 | -0.44163 | -0.43105 | -0.40414 | 0.33312 | 0.91258 | -0.56942 | -0.36578 | -0.35144 | 0.31688 |
| LEDUC | -0.44163 | 1.00000 | 0.99278 | 0.03366 | -0.10939 | -0.50223 | 0.43882 | 0.41426 | 0.03538 | -0.09720 |
| SREDUC | -0.43105 | 0.99278 | 1.00000 | 0.06330 | -0.11388 | -0.52113 | 0.46037 | 0.39972 | 0.06687 | -0.10138 |
| UNEMP | -0.40414 | 0.03366 | 0.06330 | 1.00000 | -0.35092 | -0.39632 | 0.35159 | 0.09194 | 0.97630 | -0.33194 |
| V13 | 0.33312 | -0.10939 | -0.11388 | -0.35092 | 1.00000 | 0.26874 | -0.20067 | -0.15019 | -0.36113 | 0.99814 |
| LPART | 0.91258 | -0.50223 | -0.52113 | -0.39632 | 0.26874 | 1.00000 | -0.58486 | -0.29344 | -0.35256 | 0.25243 |
| LV8 | -0.56942 | 0.43882 | 0.46037 | 0.35159 | -0.20067 | -0.58486 | 1.00000 | 0.22817 | 0.30889 | -0.18306 |
| LAGE | -0.36578 | 0.41426 | 0.39972 | 0.09194 | -0.15019 | -0.29344 | 0.22817 | 1.00000 | 0.09275 | -0.13899 |
| LUNEMP | -0.35144 | 0.03538 | 0.06687 | 0.97630 | -0.36113 | -0.35256 | 0.30889 | 0.09275 | 1.00000 | -0.34406 |
| LV13 | 0.31688 | -0.09720 | -0.10138 | -0.33194 | 0.99814 | 0.25243 | -0.18306 | -0.13899 | -0.34406 | 1.00000 |

Pearson Correlations: University of Regina CCS Areas with Part-Time Enrollment

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             PART      V7        LDIST     SRDIST    V8        AGE       EDUC      SRV8      SRAGE     SRUNEMP   SRV13

PART         1.00000  -0.21445  -0.20181  -0.22377  -0.49226  -0.16872  -0.42165  -0.52791  -0.16777  -0.24054   0.21531
V7          -0.21446   1.00000   0.82993   0.96396   0.64190   0.14375   0.36109   0.61277   0.13847   0.07782   0.37605
LDIST       -0.20181   0.82993   1.00000   0.94497   0.45686   0.22261   0.21628   0.44196   0.21207   0.00016   0.36940
SRDIST      -0.22377   0.96396   0.94497   1.00000   0.59152   0.18120   0.33432   0.56881   0.17096   0.04330   0.38640
V8          -0.49226   0.64190   0.45686   0.59152   1.00000   0.16136   0.70882   0.99735   0.17773   0.42904  -0.05468
AGE         -0.16872   0.14375   0.22261   0.18120   0.16136   1.00000  -0.13503   0.16586   0.99239   0.35934   0.17226
EDUC        -0.42165   0.36109   0.21628   0.33432   0.70882  -0.13503   1.00000   0.71737  -0.13763   0.25650  -0.30037
SRV8        -0.52791   0.61277   0.44196   0.56881   0.99735   0.16586   0.71737   1.00000   0.18126   0.44927  -0.08227
SRAGE       -0.16777   0.13847   0.21207   0.17096   0.17773   0.99239  -0.13763   0.18126   1.00000   0.37425   0.13932
SRUNEMP     -0.24054   0.07782   0.00016   0.04330   0.42904   0.35934   0.25650   0.44927   0.37425   1.00000  -0.22169
SRV13        0.21531   0.37605   0.36940   0.38640  -0.05468   0.17226  -0.30037  -0.08227   0.13832  -0.22169   1.00000

SRPART       0.93400  -0.35235  -0.37592  -0.38534  -0.66533  -0.22069  -0.53093  -0.69275  -0.23070  -0.29045   0.16989
LEDUC       -0.49789   0.37955   0.24352   0.35780   0.70395  -0.14214   0.97840   0.71906  -0.14836   0.27824  -0.29483
SREDUC      -0.46091   0.37460   0.23269   0.36003   0.71042  -0.14117   0.99441   0.72224  -0.14564   0.26785  -0.29836
UNEMP       -0.08989   0.04060  -0.03725   0.00205   0.29750   0.31352   0.17253   0.31098   0.33059   0.93677  -0.24229
V13          0.22045   0.37489   0.36752   0.38471  -0.05073   0.17477  -0.29895  -0.07851   0.14232  -0.21969   0.99979
LPART        0.69377  -0.43274  -0.48939  -0.48505  -0.77899  -0.19329  -0.64074  -0.79119  -0.21300  -0.32986   0.15340

LV8         -0.56468   0.58149   0.42512   0.54383   0.98898   0.16967   0.72129   0.99712   0.18379   0.46843  -0.10896
LAGE        -0.16407   0.12713   0.19441   0.15381   0.18943   0.97001  -0.14125   0.19208   0.99249   0.37925   0.10381
LUNEMP      -0.12417   0.09810  -0.01201   0.04841   0.38312   0.23843   0.26118   0.39523   0.26748   0.93222  -0.29053
LV13         0.21006   0.37694   0.37109   0.38785  -0.05870   0.16968  -0.30176  -0.08607   0.13628  -0.22359   0.99979


             SRPART    LEDUC     SREDUC    UNEMP     V13       LPART               LV8       LAGE      LUNEMP    LV13

PART         0.93400  -0.49789  -0.46091  -0.08989   0.22045   0.69377            -0.56468  -0.16407  -0.12417   0.21006
V7          -0.35235   0.37955   0.37460   0.04060   0.37489  -0.43274             0.58149   0.12713   0.09810   0.37694
LDIST       -0.37592   0.24352   0.23269  -0.03725   0.36752  -0.48939             0.42512   0.19441  -0.01201   0.37109
SRDIST      -0.38534   0.35780   0.36003   0.00205   0.38471  -0.48505             0.54383   0.15381   0.04841   0.38785
V8          -0.66533   0.70395   0.71042   0.29750  -0.05073  -0.77899             0.98898   0.18943   0.38312  -0.05870
AGE         -0.22069  -0.14214  -0.14117   0.31352   0.17477  -0.19329             0.16967   0.97001   0.23843   0.16968
EDUC        -0.53093   0.97840   0.99441   0.17253  -0.29895  -0.64074             0.72129  -0.14126   0.26118  -0.30176
SRV8        -0.69275   0.71906   0.72224   0.31098  -0.07851  -0.79118             0.99712   0.19208   0.39523  -0.08607

SRAGE       -0.23070  -0.14836  -0.14564   0.33059   0.14232  -0.21300             0.18379   0.99249   0.26748   0.13628
SRUNEMP     -0.29045   0.27824   0.26785   0.93677  -0.21969  -0.32986             0.46843   0.37925   0.93222  -0.22359
SRV13        0.16989  -0.29483  -0.29836  -0.24229   0.99979   0.15340            -0.10896   0.10381  -0.29053   0.99979

SRPART       1.00000  -0.58980  -0.56231  -0.11188   0.17352   0.89397            -0.71839  -0.23675  -0.16831   0.16613
LEDUC       -0.58980   1.00000   0.99473   0.17987  -0.29452  -0.64642             0.73023  -0.15566   0.26582  -0.29509
SREDUC      -0.56231   0.99473   1.00000   0.17656  -0.29752  -0.64601             0.72974  -0.15108   0.26451  -0.29916
UNEMP       -0.11188   0.17987   0.17656   1.00000  -0.24066  -0.16676             0.32408   0.33752   0.97140  -0.24385
V13          0.17352  -0.29452  -0.29752  -0.24066   1.00000   0.15437            -0.10547   0.10725  -0.28820   0.99916
LPART        0.89397  -0.64642  -0.64601  -0.16675   0.15437   1.00000            -0.79865  -0.22848  -0.24312   0.15230

LV8         -0.71839   0.73023   0.72974   0.32408  -0.10547  -0.79865             1.00000   0.19342   0.40613  -0.11250
LAGE        -0.23675  -0.15566  -0.15108   0.33752   0.10725  -0.22848             0.19342   1.00000   0.28602   0.10035
LUNEMP      -0.16831   0.26582   0.26451   0.97140  -0.28820  -0.24312             0.40613   0.28602   1.00000  -0.29276
LV13         0.16613  -0.29509  -0.29916  -0.24385   0.99916   0.15230            -0.11250   0.10035  -0.29276   1.00000
```

Pearson Correlations: Brandon University CCS Areas with Part-Time Enrollment

|  | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.24855 | -0.26844 | -0.28069 | -0.43037 | 0.20300 | -0.46454 | -0.54374 | -0.50628 | -0.16661 | -0.27990 |
| V7 | -0.24855 | 1.00000 | 0.82996 | 0.96103 | 0.59223 | 0.12203 | 0.19418 | 0.19360 | 0.19619 | 0.23045 | 0.25215 |
| LDIST | -0.26844 | 0.82996 | 1.00000 | 0.94833 | 0.37208 | 0.15145 | -0.02034 | -0.00624 | -0.01327 | 0.19748 | 0.18834 |
| SRDIST | -0.28069 | 0.96103 | 0.94833 | 1.00000 | 0.52001 | 0.13743 | 0.11466 | 0.12008 | 0.11875 | 0.23702 | 0.24528 |
| V8 | -0.43037 | 0.59223 | 0.37208 | 0.52001 | 1.00000 | 0.04921 | 0.68017 | 0.66717 | 0.67842 | 0.19163 | 0.38430 |
| AGE | 0.20300 | 0.12203 | 0.15145 | 0.13743 | 0.04921 | 1.00000 | 0.03118 | 0.03139 | 0.02997 | 0.22012 | 0.22938 |
| EDUC | -0.46454 | 0.19418 | -0.02034 | 0.11466 | 0.68017 | 0.03118 | 1.00000 | 0.97366 | 0.99332 | 0.03784 | 0.20165 |
| LEDUC | -0.54374 | 0.19360 | -0.00624 | 0.12008 | 0.66717 | 0.03139 | 0.97366 | 1.00000 | 0.99337 | 0.02923 | 0.20565 |
| SREDUC | -0.50628 | 0.19619 | -0.01327 | 0.11875 | 0.67842 | 0.02997 | 0.99332 | 0.99337 | 1.00000 | 0.03321 | 0.20488 |
| UNEMP | -0.16661 | 0.23045 | 0.19748 | 0.23702 | 0.19163 | 0.22012 | 0.03784 | 0.02923 | 0.03321 | 1.00000 | 0.93746 |
| SRUNEMP | -0.27990 | 0.25215 | 0.18834 | 0.24528 | 0.38430 | 0.22938 | 0.20165 | 0.20565 | 0.20488 | 0.93746 | 1.00000 |
| V13 | 0.11780 | 0.37113 | 0.37894 | 0.38726 | 0.08801 | 0.26141 | -0.19374 | -0.18188 | -0.18799 | -0.09910 | -0.04433 |
| LFULL | 0.74956 | -0.37506 | -0.44326 | -0.43946 | -0.62023 | 0.07475 | -0.58835 | -0.59103 | -0.59236 | -0.12095 | -0.26767 |
| LV8 | -0.45763 | 0.50236 | 0.31367 | 0.44297 | 0.98438 | 0.01829 | 0.68272 | 0.68646 | 0.68953 | 0.19349 | 0.39687 |
| LAGE | 0.16153 | 0.15459 | 0.20473 | 0.17942 | 0.09269 | 0.98234 | 0.02647 | 0.02601 | 0.02468 | 0.26047 | 0.27689 |
| SRAGE | 0.18267 | 0.13892 | 0.17747 | 0.15849 | 0.07222 | 0.99567 | 0.03034 | 0.03017 | 0.02882 | 0.24240 | 0.25553 |
| LUNEMP | -0.19183 | 0.26162 | 0.19636 | 0.25459 | 0.27393 | 0.26272 | 0.10240 | 0.08887 | 0.09561 | 0.97614 | 0.95386 |
| LV13 | 0.12007 | 0.36569 | 0.37962 | 0.38444 | 0.07706 | 0.26221 | -0.19984 | -0.18741 | -0.19378 | -0.10049 | -0.04577 |
| SRFULL | 0.94656 | -0.33418 | -0.37490 | -0.38183 | -0.55830 | 0.16656 | -0.54070 | -0.59846 | -0.57234 | -0.14573 | -0.28681 |
| SRV8 | -0.44648 | 0.54847 | 0.34396 | 0.48280 | 0.99608 | 0.03432 | 0.68491 | 0.68020 | 0.68742 | 0.19336 | 0.39259 |
| SRV13 | 0.11897 | 0.36854 | 0.37936 | 0.38595 | 0.08266 | 0.26183 | -0.19678 | -0.18464 | -0.19088 | -0.09885 | -0.04509 |

|  | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.11780 | 0.74956 | -0.45763 | 0.16153 | 0.18267 | -0.19183 | 0.12007 | 0.94656 | -0.44648 | 0.11897 |
| V7 | 0.37113 | -0.37506 | 0.50236 | 0.15459 | 0.13892 | 0.26162 | 0.36569 | -0.33418 | 0.54847 | 0.36854 |
| LDIST | 0.37894 | -0.44326 | 0.31367 | 0.20473 | 0.17747 | 0.19636 | 0.37962 | -0.37490 | 0.34396 | 0.37936 |
| SRDIST | 0.38726 | -0.43946 | 0.44297 | 0.17942 | 0.15849 | 0.25459 | 0.38444 | -0.38183 | 0.48280 | 0.38595 |
| V8 | 0.08801 | -0.62023 | 0.98438 | 0.09269 | 0.07222 | 0.27393 | 0.07706 | -0.55830 | 0.99609 | 0.08266 |
| AGE | 0.26141 | 0.07475 | 0.01829 | 0.98234 | 0.99567 | 0.26272 | 0.26221 | 0.16656 | 0.03432 | 0.26183 |
| EDUC | -0.19374 | -0.58835 | 0.68272 | 0.02647 | 0.03034 | 0.10240 | -0.19984 | -0.54070 | 0.68491 | -0.19678 |
| LEDUC | -0.18188 | -0.59103 | 0.68646 | 0.02601 | 0.03017 | 0.08887 | -0.18741 | -0.59846 | 0.68020 | -0.18464 |
| SREDUC | -0.18799 | -0.59236 | 0.68953 | 0.02468 | 0.02882 | 0.09561 | -0.19378 | -0.57234 | 0.68742 | -0.19088 |
| UNEMP | -0.09910 | -0.12095 | 0.19349 | 0.26047 | 0.24240 | 0.97614 | -0.10048 | -0.14573 | 0.19336 | -0.09885 |
| SRUNEMP | -0.04433 | -0.26767 | 0.39687 | 0.27689 | 0.25553 | 0.95386 | -0.04577 | -0.28681 | 0.39259 | -0.04508 |
| V13 | 1.00000 | 0.03278 | 0.03388 | 0.26318 | 0.26291 | -0.07890 | 0.99892 | 0.08119 | 0.06088 | 0.99973 |
| LFULL | 0.03278 | 1.00000 | -0.63605 | 0.03989 | 0.05729 | -0.16774 | 0.03334 | 0.91384 | -0.63174 | 0.03302 |
| LV8 | 0.03388 | -0.63605 | 1.00000 | 0.06025 | 0.04036 | 0.26988 | 0.02415 | -0.58536 | 0.99607 | 0.02803 |
| LAGE | 0.26318 | 0.03989 | 0.06025 | 1.00000 | 0.99545 | 0.30383 | 0.26410 | 0.12672 | 0.07731 | 0.26364 |
| SRAGE | 0.26291 | 0.05729 | 0.04036 | 0.99545 | 1.00000 | 0.28585 | 0.26367 | 0.14696 | 0.05700 | 0.26331 |
| LUNEMP | -0.07890 | -0.16774 | 0.26988 | 0.30383 | 0.28585 | 1.00000 | -0.08200 | -0.18114 | 0.27312 | -0.08049 |
| LV13 | 0.99892 | 0.03334 | 0.02415 | 0.26410 | 0.26367 | -0.08200 | 1.00000 | 0.08232 | 0.05049 | 0.99973 |
| SRFULL | 0.08119 | 0.91384 | -0.58536 | 0.12672 | 0.14696 | -0.18114 | 0.08232 | 1.00000 | -0.57499 | 0.08175 |
| SRV8 | 0.06086 | -0.63174 | 0.99607 | 0.07731 | 0.05700 | 0.27312 | 0.05049 | -0.57499 | 1.00000 | 0.05570 |
| SRV13 | 0.99973 | 0.03302 | 0.02903 | 0.26364 | 0.26331 | -0.08049 | 0.99973 | 0.08175 | 0.05570 | 1.00000 |

Pearson Correlations: Brandon University CCS Areas with Full-Time Enrollment

| | PART | V7 | LDIST | SRDIST | V8 | AGE | EDUC | SRV8 | SRAGE | SRUNEMP | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PART | 1.00000 | -0.28211 | -0.24463 | -0.27320 | -0.31046 | -0.05337 | -0.22147 | -0.31730 | -0.05722 | -0 25569 | 0.06475 |
| V7 | -0.28211 | 1.00000 | 0.87106 | 0.87192 | 0.39380 | 0.09373 | 0.24530 | 0.36529 | 0.10716 | 0.18865 | -0.04634 |
| LDIST | -0.24463 | 0.87106 | 1.00000 | 0.96027 | 0.08329 | -0.04333 | 0.00002 | 0.08352 | -0.03433 | 0.03804 | -0.15040 |
| SRDIST | -0.27320 | 0.87192 | 0.96027 | 1.00000 | 0.26485 | 0.02907 | 0.15070 | 0.23960 | 0.04156 | 0.12214 | -0.10738 |
| V8 | -0.31046 | 0.39380 | 0.08329 | 0.26485 | 1.00000 | 0.11779 | 0.76285 | 0.99681 | 0.13555 | 0.26811 | -0.08664 |
| AGE | -0.05337 | 0.09373 | -0.04333 | 0.02907 | 0.11779 | 1.00000 | 0.04350 | 0.11083 | 0.99669 | 0.20388 | 0.28546 |
| EDUC | -0.22147 | 0.24530 | 0.00002 | 0.15070 | 0.76285 | 0.04350 | 1.00000 | 0.76511 | 0.05952 | 0.20034 | -0.26604 |
| SRV8 | -0.31730 | 0.36529 | 0.08352 | 0.23960 | 0.99681 | 0.11083 | 0.76511 | 1.00000 | 0.12824 | 0.25860 | -0.10329 |
| SRAGE | -0 05722 | 0.10716 | -0.03433 | 0.04156 | 0.13555 | 0.99669 | 0.05952 | 0.12824 | 1.00000 | 0.19459 | 0.27238 |
| SRUNEMP | -0.25569 | 0 18865 | 0 03804 | 0 12214 | 0.26811 | 0.20388 | 0.20034 | 0.25860 | 0 19459 | 1.00000 | 0.00909 |
| SRV13 | 0.06475 | -0.04634 | -0.15040 | -0.10738 | -0.08664 | 0.28546 | -0.26604 | -0.10329 | 0.27238 | 0.00909 | 1.00000 |
| SRPART | 0.96695 | -0.35599 | -0.29350 | -0.33931 | -0.39868 | -0.08948 | -0.33063 | -0.40123 | -0.09678 | -0.26069 | 0.09515 |
| LEDUC | -0.27691 | 0.23520 | 0.01950 | 0 15312 | 0.75606 | 0 01611 | 0 95790 | 0.76780 | 0.03170 | 0.18231 | -0.24601 |
| SREDUC | -0.25127 | 0.24244 | 0.00847 | 0.15258 | 0.77015 | 0.03073 | 0.98986 | 0.77725 | 0.04687 | 0.19697 | -0.26095 |
| UNEMP | -0.08418 | 0.19445 | 0.08391 | 0.14753 | 0.16037 | 0.11215 | 0.09256 | 0.14377 | 0.09651 | 0.93154 | -0.00887 |
| V13 | 0.06878 | -0.04615 | -0.14890 | -0.10642 | -0.08645 | 0.28425 | -0.26613 | -0.10318 | 0.27159 | 0.00095 | 0.99967 |
| LPART | 0.79976 | -0.43733 | -0.35288 | -0.41504 | -0.45707 | -0.14268 | -0.45461 | -0.45324 | -0.15147 | -0.25592 | 0.11745 |
| LV8 | -0.32379 | 0.33613 | 0.04485 | 0.21442 | 0.98748 | 0.10247 | 0.78151 | 0.99691 | 0.11942 | 0.24625 | -0.11737 |
| LAGE | -0.06099 | 0.11769 | -0.02660 | 0.05192 | 0.15214 | 0.98683 | 0.07521 | 0.14467 | 0.99670 | 0.18086 | 0.25619 |
| LUNEMP | -0.09875 | 0.24000 | 0.10870 | 0.18579 | 0.24563 | 0.16067 | 0.15339 | 0.22853 | 0.15377 | 0.92883 | -0.04330 |
| LV13 | 0.06078 | -0.04851 | -0.15172 | -0.10824 | -0.08699 | 0.28642 | -0.26584 | -0.10364 | 0.27295 | 0.01708 | 0.99868 |

| | SRPART | LEDUC | SREDUC | UNEMP | V13 | LPART | LV8 | LAGE | LUNEMP | LV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| PART | 0.96695 | -0.27691 | -0.25127 | -0.08418 | 0.06878 | 0.79976 | -0.32379 | -0.06099 | -0.09875 | 0.06078 |
| V7 | -0.35599 | 0.23520 | 0.24244 | 0.19445 | -0.04615 | -0.43733 | 0.33613 | 0.11789 | 0.24000 | -0.04651 |
| LDIST | -0.29350 | 0.01950 | 0.00847 | 0.08391 | -0.14890 | -0.35288 | 0.04485 | -0.02660 | 0.10870 | -0.15172 |
| SRDIST | -0.33931 | 0.15312 | 0.15258 | 0.14753 | -0.10642 | -0.41504 | 0.21442 | 0.05192 | 0.18579 | -0.10824 |
| V8 | -0.39868 | 0.75606 | 0.77015 | 0.16037 | -0.08645 | -0.45707 | 0.98748 | 0.15214 | 0.24563 | -0.08699 |
| AGE | -0 08948 | 0 01611 | 0 03073 | 0.11216 | 0 28426 | -0.14268 | 0.10247 | 0.98683 | 0.16067 | 0.28642 |
| EDUC | -0.33063 | 0.95790 | 0.98986 | 0.09256 | -0.26613 | -0.45461 | 0.78151 | 0.07521 | 0.15339 | -0.26584 |
| SRV8 | -0.40123 | 0.76780 | 0.77725 | 0.14377 | -0.10318 | -0.45324 | 0.99691 | 0.14467 | 0.22853 | -0 10354 |
| SRAGE | -0.09678 | 0.03170 | 0.04687 | 0.09651 | 0.27159 | -0.15147 | 0.11942 | 0.99670 | 0.15377 | 0.27295 |
| SRUNEMP | -0.26069 | 0.18231 | 0.19697 | 0.93154 | 0.00095 | -0.25592 | 0.24625 | 0.18086 | 0.92883 | 0.01708 |
| SRV13 | 0.09515 | -0.24601 | -0.26095 | -0.00887 | 0.99967 | 0.11745 | -0.11737 | 0.25619 | -0.04330 | 0 99868 |
| SRPART | 1.00000 | -0.36010 | -0.34853 | -0.09508 | 0.09807 | 0.91922 | -0.40232 | -0.10339 | -0.11984 | 0.09224 |
| LEDUC | -0 36010 | 1 00000 | 0 98872 | 0.06045 | -0 24718 | -0.42519 | 0 77377 | 0.04759 | 0.11159 | -0 24479 |
| SREDUC | -0.34853 | 0.98872 | 1.00000 | 0.08012 | -0.26156 | -0.44343 | 0.77845 | 0.06297 | 0.13722 | -0.26026 |
| UNEMP | -0.09508 | 0.06045 | 0.08012 | 1.00000 | -0.01566 | -0.12773 | 0.12459 | 0.07648 | 0.95882 | -0.00217 |
| V13 | 0.09807 | -0.24718 | -0.26156 | -0.01566 | 1.00000 | 0.11806 | -0.11733 | 0.25584 | -0.04877 | 0.99869 |
| LPART | 0.91922 | -0.42519 | -0.44343 | -0.12773 | 0.11806 | 1.00000 | -0.44656 | -0.15850 | -0.16798 | 0.11678 |
| LV8 | -0.40232 | 0.77377 | 0.77845 | 0.12459 | -0.11733 | -0.44656 | 1.00000 | 0.13560 | 0.20844 | -0.11754 |
| LAGE | -0.10339 | 0.04759 | 0.06297 | 0.07648 | 0.25584 | -0.15850 | 0.13560 | 1.00000 | 0.14194 | 0.25634 |
| LUNEMP | -0.11984 | 0.11159 | 0.13722 | 0.95882 | -0.04877 | -0.16798 | 0.20844 | 0.14194 | 1.00000 | -0.03790 |
| LV13 | 0.09224 | -0.24479 | -0.26026 | -0.00217 | 0.99869 | 0.11578 | -0.11764 | 0.25634 | -0.03790 | 1.00000 |

Pearson Correlations: University of Manitoba CCS Areas with Part-Time Enrollment

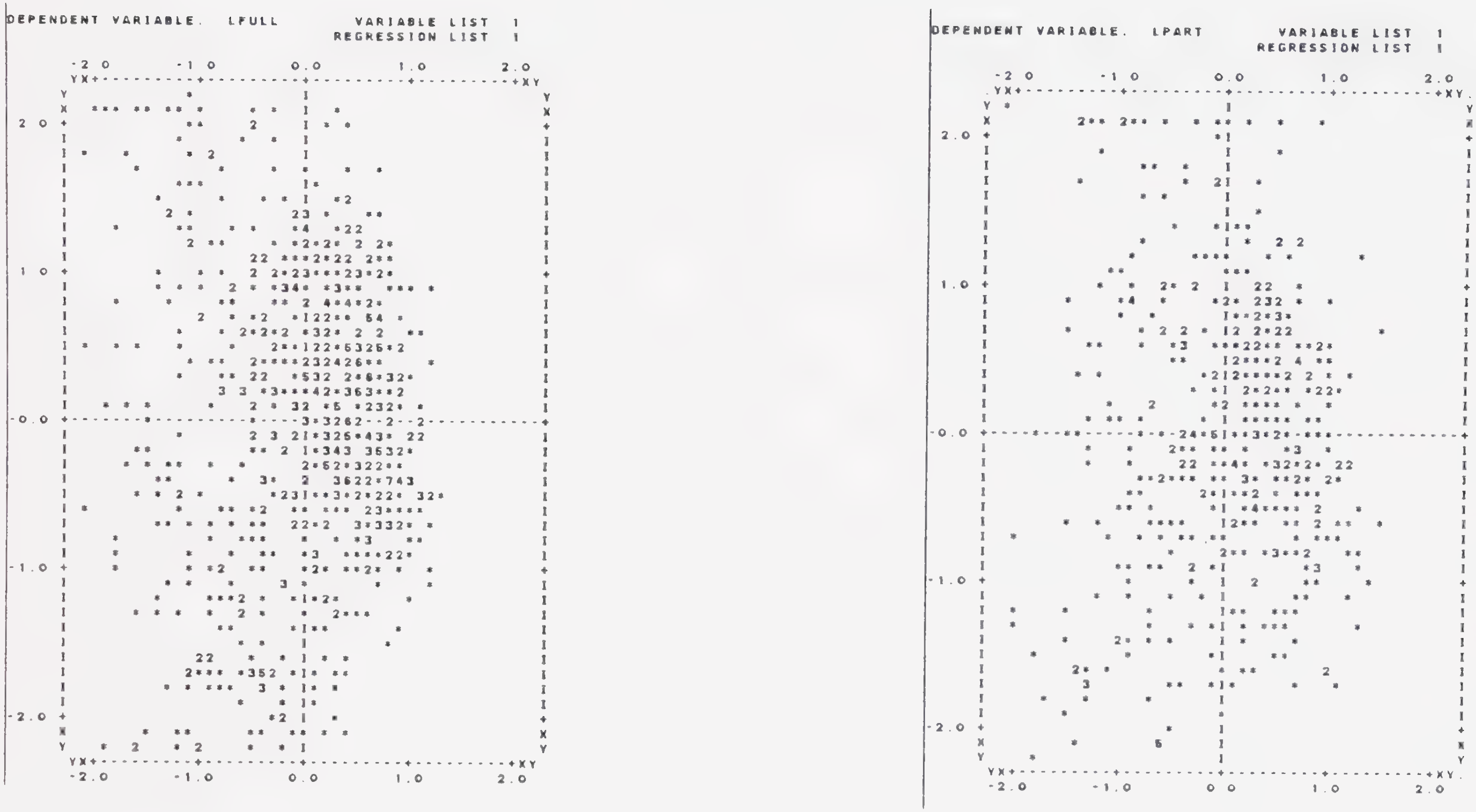
| | FULL | V7 | LDIST | SRDIST | V8 | AGE | EDUC | LEDUC | SREDUC | UNEMP | SRUNEMP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 1.00000 | -0.27046 | -0.15531 | -0.22027 | -0.48174 | -0.07171 | -0.28081 | -0.40805 | -0.35083 | 0.12542 | -0.07773 |
| V7 | -0.27046 | 1.00000 | 0.86347 | 0.96751 | 0.33146 | 0.10131 | 0.20017 | 0.23021 | 0.22228 | 0.08910 | 0.09283 |
| LDIST | -0.15531 | 0.86347 | 1.00000 | 0.96074 | 0.08572 | -0.01561 | -0.00755 | 0.00073 | -0.00287 | 0.04228 | -0.00840 |
| SRDIST | -0.22027 | 0.96751 | 0.96074 | 1.00000 | 0.21972 | 0.04965 | 0.11125 | 0.13360 | 0.12680 | 0.06816 | 0.04346 |
| V8 | -0.48174 | 0.33146 | 0.08572 | 0.21972 | 1.00000 | 0.07568 | 0.75187 | 0.75276 | 0.76539 | 0.13481 | 0.27562 |
| AGE | -0.07171 | 0.10131 | -0.01561 | 0.04965 | 0.07568 | 1.00000 | -0.07434 | 0.00551 | -0.03445 | 0.06357 | 0.13262 |
| EDUC | -0.28081 | 0.20017 | -0.00755 | 0.11125 | 0.75187 | -0.07434 | 1.00000 | 0.94105 | 0.98428 | 0.04042 | 0.14623 |
| LEDUC | -0.40805 | 0.23021 | 0.00073 | 0.13360 | 0.75276 | 0.00551 | 0.94105 | 1.00000 | 0.98568 | 0.07365 | 0.19181 |
| SREDUC | -0.35083 | 0.22228 | -0.00287 | 0.12680 | 0.76539 | -0.03445 | 0.98428 | 0.98568 | 1.00000 | 0.05793 | 0.17162 |
| UNEMP | 0.12542 | 0.08910 | 0.04228 | 0.06816 | 0.13481 | 0.06357 | 0.04042 | 0.07365 | 0.05793 | 1.00000 | 0.93402 |
| SRUNEMP | -0.07773 | 0.09283 | -0.00840 | 0.04346 | 0.27562 | 0.13262 | 0.14623 | 0.19181 | 0.17162 | 0.93402 | 1.00000 |
| V13 | 0.16549 | -0.16066 | -0.25505 | -0.22446 | -0.15256 | 0.31986 | -0.22736 | -0.28689 | -0.26291 | -0.03045 | -0.01164 |
| LFULL | 0.75215 | -0.59431 | -0.40294 | -0.51906 | -0.57194 | -0.13986 | -0.39229 | -0.46061 | -0.43785 | -0.08619 | -0.22346 |
| LV8 | -0.52163 | 0.28541 | 0.05043 | 0.17831 | 0.98563 | 0.10060 | 0.70815 | 0.73966 | 0.73704 | 0.12362 | 0.27509 |
| LAGE | -0.12509 | 0.11536 | -0.01962 | 0.05636 | 0.09040 | 0.98389 | -0.08343 | 0.01327 | -0.03436 | 0.05819 | 0.13199 |
| SRAGE | -0.09910 | 0.10964 | -0.01728 | 0.05392 | 0.08471 | 0.99590 | -0.07776 | 0.01069 | -0.03317 | 0.06223 | 0.13403 |
| LUNEMP | 0.01098 | 0.12731 | 0.05607 | 0.09705 | 0.19103 | 0.09362 | 0.06969 | 0.11598 | 0.09571 | 0.96236 | 0.94086 |
| LV13 | 0.18587 | -0.16208 | -0.26102 | -0.22831 | -0.14927 | 0.32560 | -0.22399 | -0.28399 | -0.25984 | -0.01578 | 0.00415 |
| SRFULL | 0.95238 | -0.43401 | -0.27941 | -0.36988 | -0.55565 | -0.09663 | -0.32903 | -0.44379 | -0.39496 | 0.00617 | -0.17647 |
| SRV8 | -0.50382 | 0.30946 | 0.06823 | 0.19967 | 0.99639 | 0.08900 | 0.73216 | 0.74900 | 0.75377 | 0.13040 | 0.27695 |
| SRV13 | 0.16573 | -0.16150 | -0.25824 | -0.22656 | -0.15098 | 0.32283 | -0.22574 | -0.28552 | -0.26145 | -0.02308 | -0.00368 |

| | V13 | LFULL | LV8 | LAGE | SRAGE | LUNEMP | LV13 | SRFULL | SRV8 | SRV13 |
|---|---|---|---|---|---|---|---|---|---|---|
| FULL | 0.16549 | 0.75215 | -0.52163 | -0.12509 | -0.09910 | 0.01098 | 0.18587 | 0.95238 | -0.50382 | 0.16573 |
| V7 | -0.16066 | -0.59431 | 0.28541 | 0.11536 | 0.10964 | 0.12731 | -0.16208 | -0.43401 | 0.30946 | -0.16150 |
| LDIST | -0.25505 | -0.40294 | 0.05043 | -0.01962 | -0.01728 | 0.05607 | -0.26102 | -0.27941 | 0.06823 | -0.25824 |
| SRDIST | -0.22446 | -0.51906 | 0.17831 | 0.05636 | 0.05392 | 0.09705 | -0.22831 | -0.36988 | 0.19967 | -0.22656 |
| V8 | -0.15256 | -0.57194 | 0.98563 | 0.09040 | 0.08471 | 0.19103 | -0.14927 | -0.55565 | 0.99639 | -0.15098 |
| AGE | 0.31986 | -0.13986 | 0.10060 | 0.98389 | 0.99590 | 0.09362 | 0.32560 | -0.09663 | 0.08900 | 0.32283 |
| EDUC | -0.22736 | -0.39229 | 0.70815 | -0.08343 | -0.07776 | 0.06969 | -0.22399 | -0.32903 | 0.73216 | -0.22574 |
| LEDUC | -0.28689 | -0.46061 | 0.73966 | 0.01327 | 0.01069 | 0.11598 | -0.28399 | -0.44379 | 0.74900 | -0.28552 |
| SREDUC | -0.26291 | -0.43785 | 0.73704 | -0.03436 | -0.03317 | 0.09571 | -0.25984 | -0.39496 | 0.75377 | -0.26145 |
| UNEMP | -0.03045 | -0.08619 | 0.12362 | 0.05819 | 0.06223 | 0.96236 | -0.01578 | 0.00617 | 0.13040 | -0.02308 |
| SRUNEMP | -0.01164 | -0.22346 | 0.27509 | 0.13199 | 0.13403 | 0.94086 | 0.00415 | -0.17647 | 0.27695 | -0.00368 |
| V13 | 1.00000 | 0.19437 | -0.15422 | 0.30643 | 0.31457 | -0.07132 | 0.99836 | 0.19126 | -0.15477 | 0.99959 |
| LFULL | 0.19437 | 1.00000 | -0.56920 | -0.17512 | -0.15903 | -0.16079 | 0.19328 | 0.90646 | -0.57352 | 0.19394 |
| LV8 | -0.15422 | -0.56920 | 1.00000 | 0.11851 | 0.11125 | 0.18230 | -0.15134 | -0.57935 | 0.99640 | -0.15284 |
| LAGE | 0.30643 | -0.17512 | 0.11851 | 1.00000 | 0.99601 | 0.10163 | 0.31228 | -0.14508 | 0.10557 | 0.30942 |
| SRAGE | 0.31457 | -0.15903 | 0.11125 | 0.99601 | 1.00000 | 0.09928 | 0.32034 | -0.12196 | 0.09897 | 0.31764 |
| LUNEMP | -0.07132 | -0.16079 | 0.18230 | 0.10163 | 0.09928 | 1.00000 | -0.05871 | -0.09106 | 0.18820 | -0.06501 |
| LV13 | 0.99836 | 0.19328 | -0.15134 | 0.31229 | 0.32034 | -0.05871 | 1.00000 | 0.19041 | -0.15167 | 0.99958 |
| SRFULL | 0.19126 | 0.90645 | -0.57935 | -0.14508 | -0.12196 | -0.09106 | 0.19041 | 1.00000 | -0.57019 | 0.19092 |
| SRV8 | -0.15477 | -0.57352 | 0.99640 | 0.10557 | 0.09897 | 0.18820 | -0.15167 | -0.57019 | 1.00000 | -0.15328 |
| SRV13 | 0.99959 | 0.19394 | -0.15284 | 0.30942 | 0.31764 | -0.06501 | 0.99958 | 0.19092 | -0.15328 | 1.00000 |

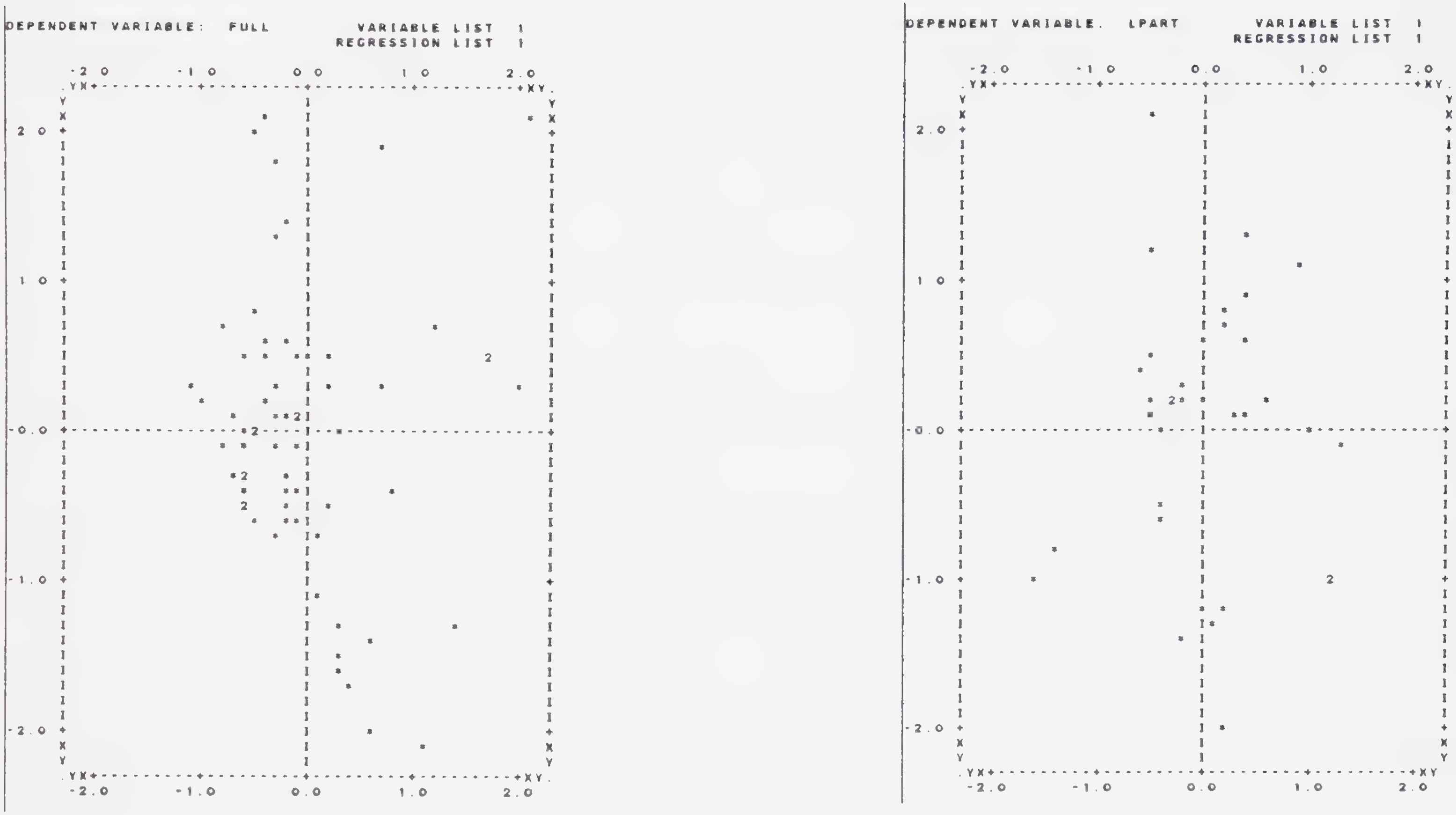
Pearson Correlations: University of Manitoba CCS Areas with Full-Time Enrollment

# APPENDIX E

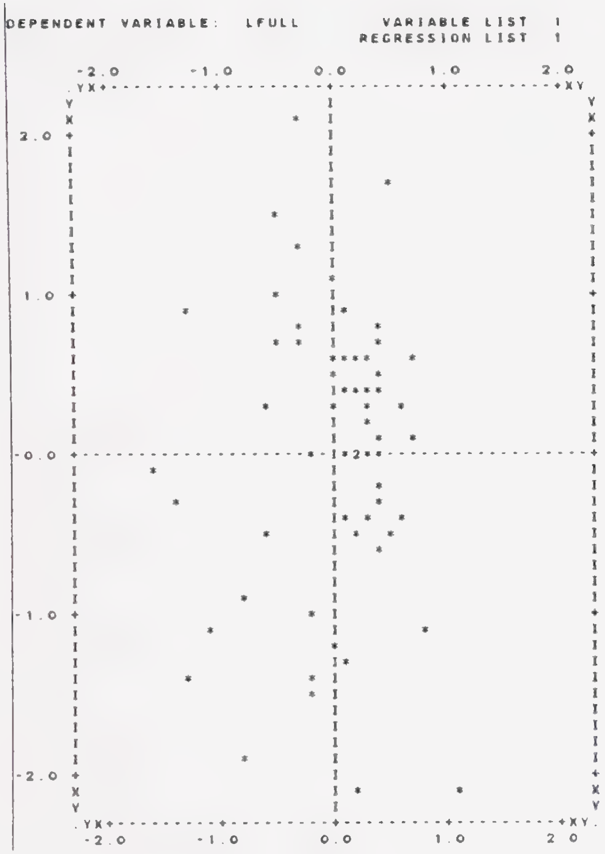
# UNIVERSITY STANDARDIZED RESIDUALS

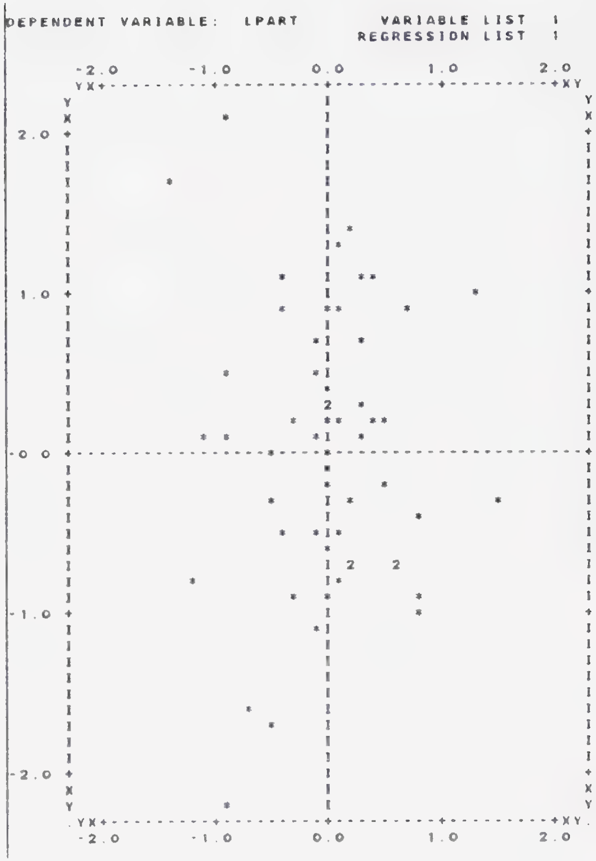


Pooled University  Data Standardized Residuals

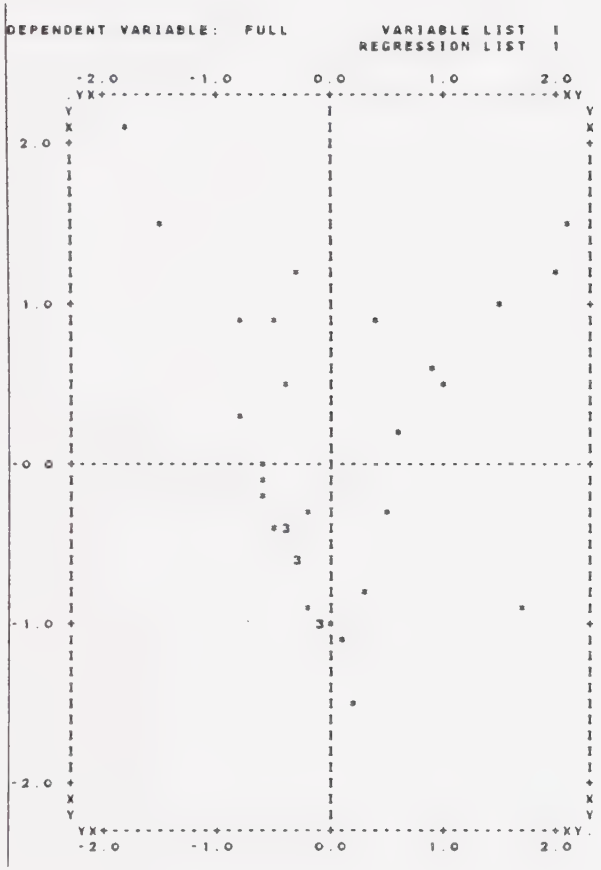


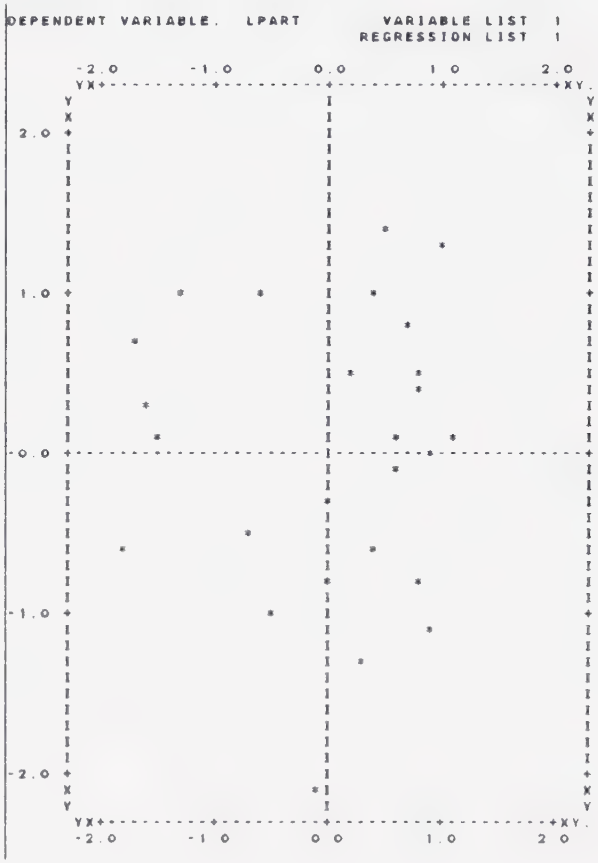
University of Victoria Standardized Residuals





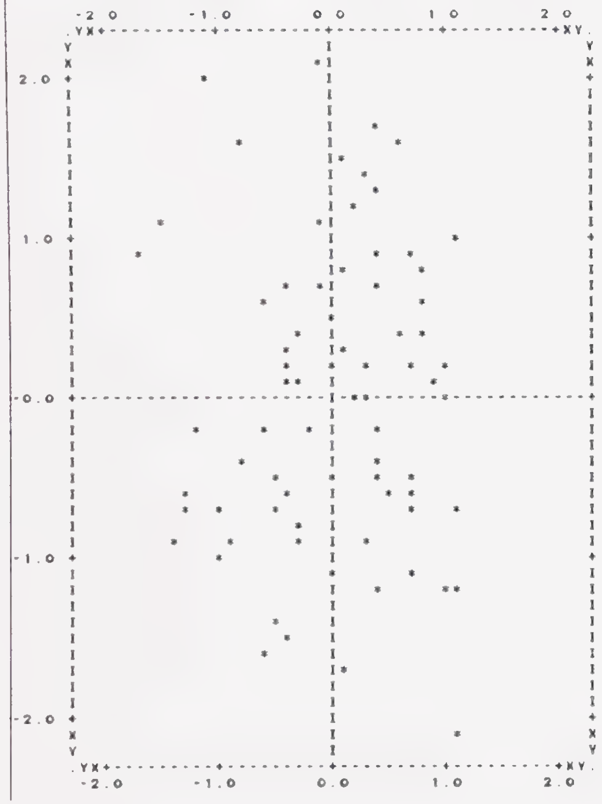
University of British Columbia Standardized Residuals


DEPENDENT VARIABLE: FULL VARIABLE LIST 1 REGRESSION LIST 1

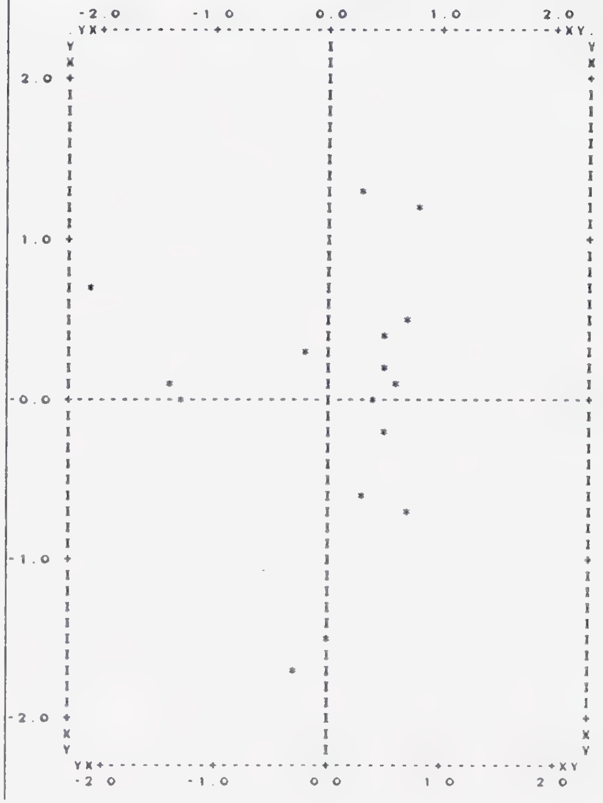

DEPENDENT VARIABLE. LPART VARIABLE LIST 1 REGRESSION LIST 1

University of Lethbridge Standardized Residuals

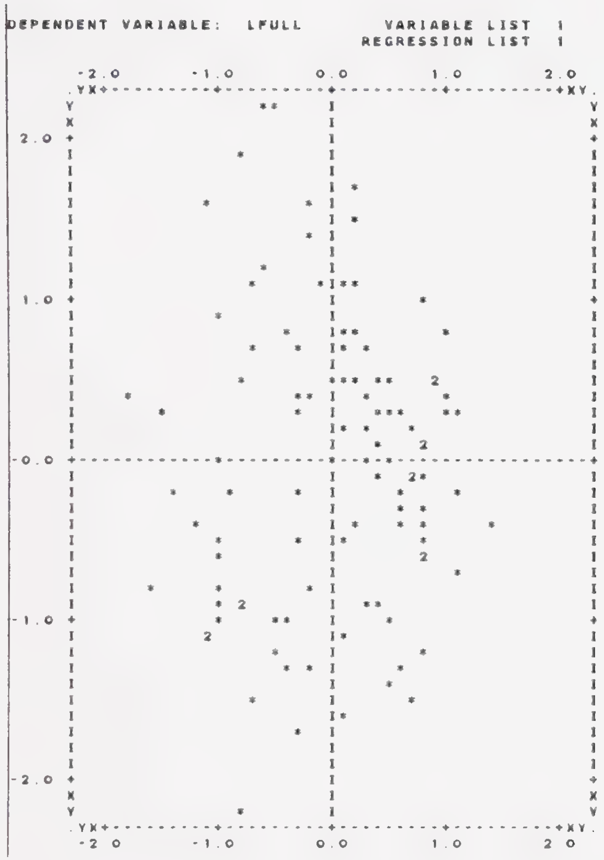
DEPENDENT VARIABLE: LFULL VARIABLE LIST 1
REGRESSION LIST 1

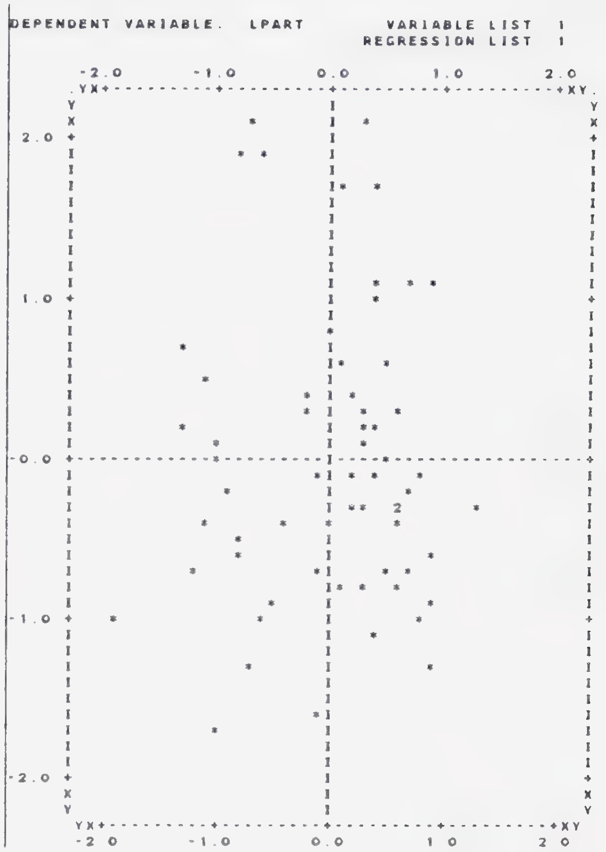


DEPENDENT VARIABLE: LPART VARIABLE LIST 1
REGRESSION LIST 1

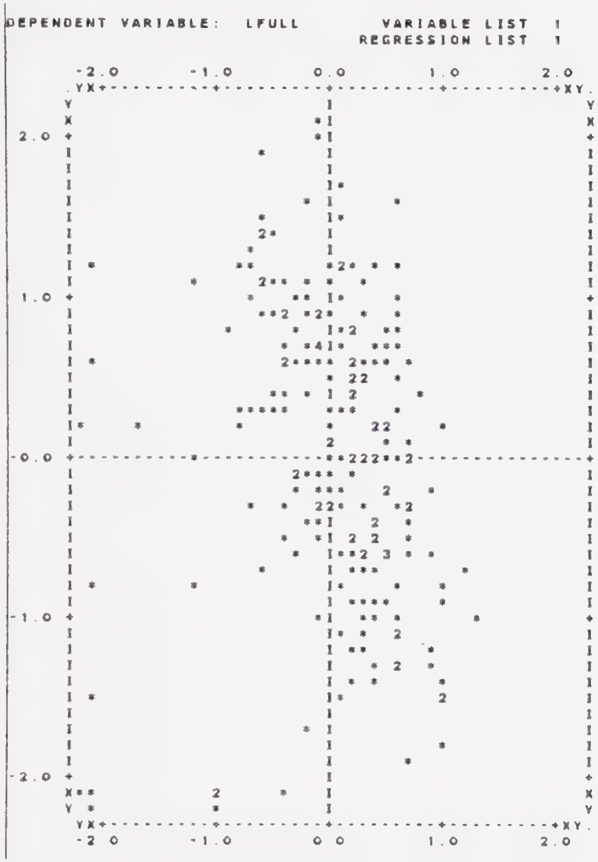


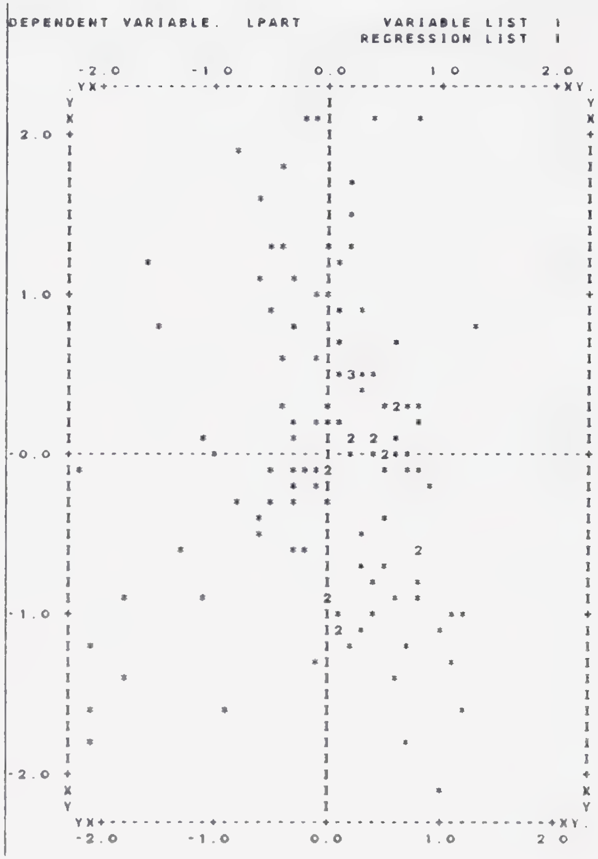
University of Calgary Standardized Residuals



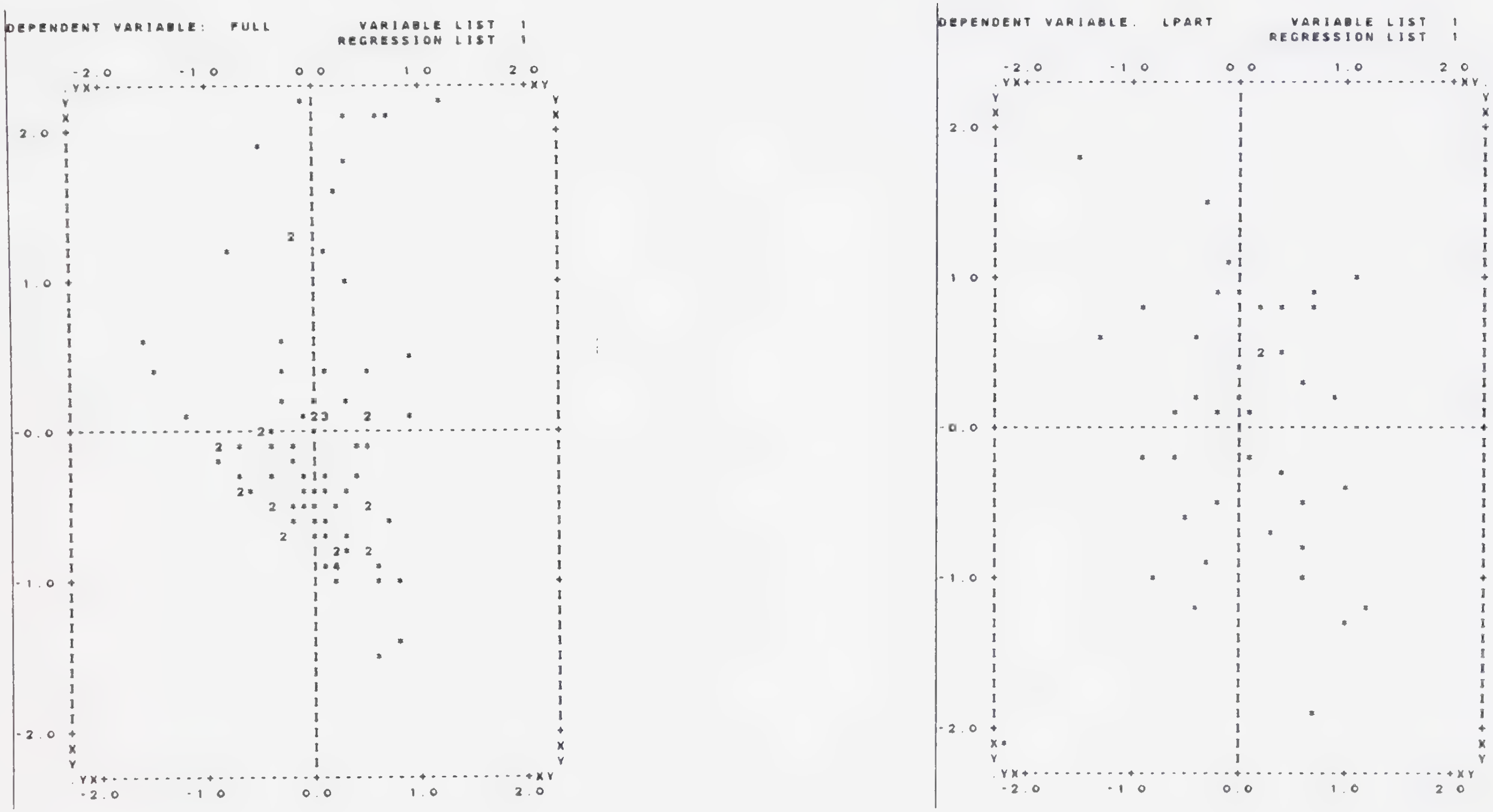


University of Alberta Standardized Residuals

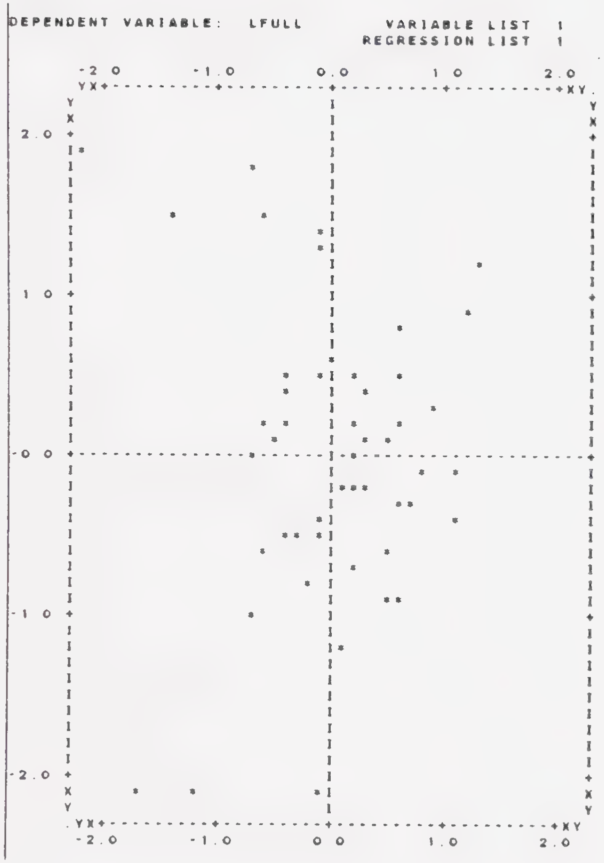


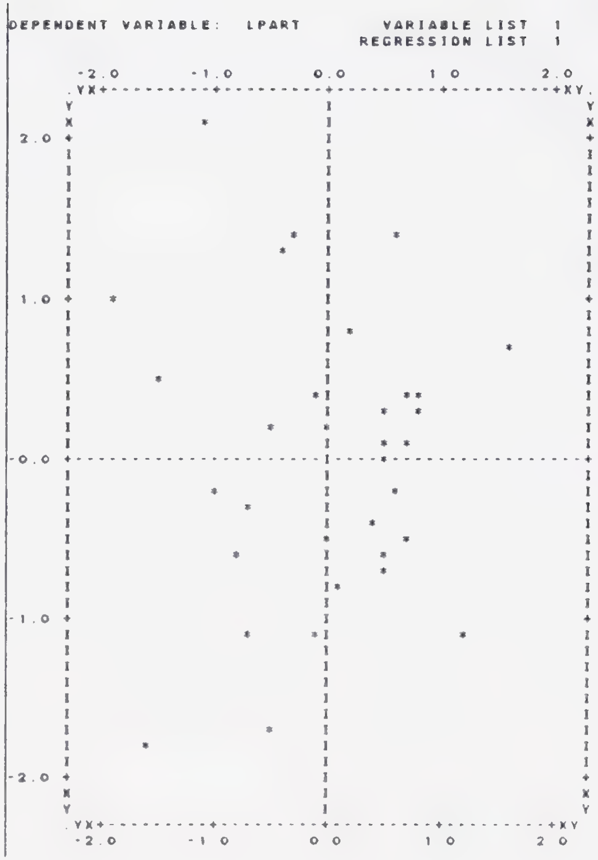


University of Saskatchewan Standardized Residuals

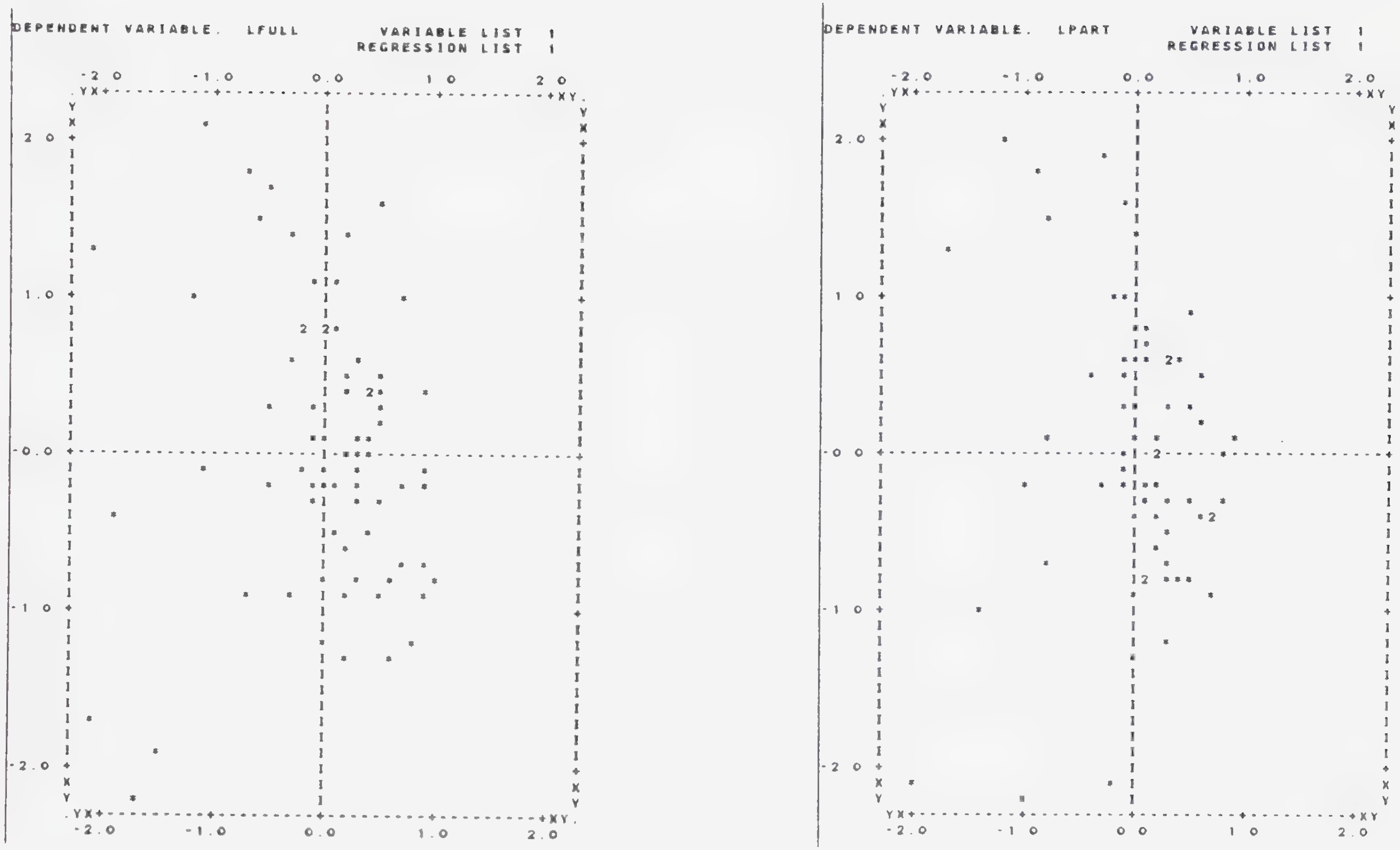


University of Regina Standardized Residuals





Brandon University Standardized Residuals



University of Manitoba Standardized Residuals

# APPENDIX F

## FORTRAN PROGRAMS USED FOR MAPPING

# Fortran Program for Mapping the Location of CCS Areas in Western Canada

```
      REAL FOXES/ZFFFFFFFF/
      REAL SH/0.02/,NH/0.04/,SYM/'*'/,NUM
      LOGICAL FOXFLG
      DIMENSION X(8000),Y(8000),A(16000)
      IUNIT = 1
      CALL PLOTS
      CALL FACTOR(.25)
      CALL XLIMIT(100.0)
      WRITE(6,11)
11    FORMAT('&ENTER NO. OF FILES(I3) ')
      READ(5,10) NF
10    FORMAT(I3)
      IF(NF.EQ.0)GOTO 999
      DO  200 K=1,NF
      N=0
      FOXFLG=.FALSE.
      IPEN=3
      CALL INPUT(X,Y,N,A,IUNIT)
      IF(N .EQ. 0) GOTO 999
      DO 100 I=1,N
      IF(X(I) .EQ. FOXES) GOTO 101
      IF(FOXFLG)GOTO 102
      CALL PLOT(X(I),Y(I),IPEN)
      IPEN=2
      GOTO 100
101   FOXFLG=.TRUE.
      NUM=Y(I)
      GOTO 100
102   IPEN=3
      XOFF=X(I)+0.05
      YOFF=Y(I)+0.05
C     CALL NUMBER(XOFF,YOFF,NH,NUM,0.0,-1)
      CALL SYMBOL(X(I),Y(I),SH,SYM,0.0,1)
      FOXFLG=.FALSE.
100   CONTINUE
200   CONTINUE
999   CALL PLOT(0.0,0.0,999)
      STOP
      END
      SUBROUTINE INPUT(X,Y,N,A,IUNIT)
      INTEGER CGETST
      INTEGER*2 LEN
      INTEGER LNO/0/, MOD/0/
      REAL WTM/'WTM'/
      DIMENSION X(2),Y(2),A(2)
      N=0
200   CALL READ(A,LEN,MOD,LNO,IUNIT,&999)
      LEN=LEN/4
      IF(CGETST(0,24,A(1)) .EQ. CGETST(0,24,WTM))GOTO 999
      DO 100 I=1,LEN,2
      N=N+1
      X(N) = A(I)
100   Y(N) = A(I+1)
      GOTO 200
999   RETURN
      END
```

# Fortran Program for Mapping No-Response Areas

```
 1                  REAL FOXES/ZFFFFFFFF/
 2                  REAL SH/0.04/,NH/.06/,SYM/'*'/,NUM
 3                  LOGICAL FOXFLG
 4                  DIMENSION X(8000),Y(8000),A(16000),VECTOR(800,6)
 5                  NNN=0
 6           30 NNN=NNN+1
 7              READ(7,31,END=32)VECTOR(NNN,1),IPROV,(VECTOR(NNN,J),J=2,6)
 8           31 FORMAT(F5.0,I5,5X,4F5.0,F10.0)
 9              VECTOR(NNN,2)=VECTOR(NNN,2)+VECTOR(NNN,3)
10              VECTOR(NNN,4)=VECTOR(NNN,4)+VECTOR(NNN,5)
11       C IF FULLTIME USE 2, IF PARTTIME USE 4
12       C IF EMPTY CCS'S THEN REPLACE LINE 14 WITH
13              IF(IPROV.NE 59)GOTO 34
14              IF(VECTOR(NNN,2).EQ.0..AND.VECTOR(NNN,4).EQ.0.0) GO TO 30
15       C      IF(VECTOR(NNN,2).NE.0.0) GO TO 30
16           34 NNN=NNN-1
17              GO TO 30
18           32 NNN=NNN-1
19                  IUNIT = 1
20                  CALL PLOTS
21                  CALL FACTOR(.94)
22                  CALL XLIMIT(100.0)
23                  WRITE(6,11)
24       11         FORMAT('&ENTER NO. OF FILES(I3) ')
25                  READ(5,10) NF
26       10         FORMAT(I3)
27                  IF(NF.EQ.0)GOTO 999
28                  DO  200 K=1,NF
29                  N=0
30                  FOXFLG=.FALSE.
31                  IPEN=3
32                  CALL INPUT(X,Y,N,A,IUNIT)
33                  IF(N .EQ. 0) GOTO 999
34              IMM=0
35                  DO 100 I=1,N
36                  IF(X(I) .EQ. FOXES) GOTO 101
37                  IF(FOXFLG)GOTO 102
38                  CALL PLOT(X(I),Y(I),IPEN)
39                  IPEN=2
40                  GOTO 100
41          101 DO 80 KKK=1,NNN
42              IF(Y(I).NE VECTOR(KKK,1)) GO TO 80
43              GO TO 81
44           80 CONTINUE
45              IMM=1
46              FOXFLG=.TRUE.
47              GO TO 100
48           81     FOXFLG= TRUE.
48.2                NUM=Y(I)
49       C      NUM=(VECTOR(KKK,2)*100.0)/VECTOR(KKK,6)
50                  GOTO 100
51          102 IF(IMM.NE.1) GO TO 84
52              IMM=0
53              FOXFLG=.FALSE.
54              GO TO 100
55           84     IPEN=3
55.2            IF(VECTOR(KKK,6) GE.0.0.AND VECTOR(KKK,6).LT.300 0)XINCR= 035
55.4            IF(VECTOR(KKK,6).GE.300.0.AND VECTOR(KKK,6) LT.1500.)
55.5           1XINCR=.097
55.6            IF(VECTOR(KKK,6) GE.1500.)XINCR=0 2
```

```
56                  XOFF=X(I)+XINCR
57                  YOFF=Y(I)+XINCR
58                  CALL NUMBER(XOFF,YOFF,NH,NUM,0.0,-1)
58 5            IF(VECTOR(KKK,6).GE 0.0.AND VECTOR(KKK,6).LT.300 0) SH=.014
58.7            IF(VECTOR(KKK,6) GE.300 0.AND VECTOR(KKK,6).LT 1500.) SH=0.069
58.8            IF(VECTOR(KKK,6) GE.1500 )SH=0.14
59                  CALL SYMBOL(X(I),Y(I),SH,SYM,0.0,1)
60                  FOXFLG=.FALSE
61       100        CONTINUE
62       200        CONTINUE
63       999        CALL PLOT(0.0,0.0,999)
64                  STOP
65                  END
66                  SUBROUTINE INPUT(X,Y,N,A,IUNIT)
67                  INTEGER CGETST
68                  INTEGER*2 LEN
69                  INTEGER LNO/0/, MOD/0/
70                  REAL WTM/'WTM'/
71                  DIMENSION X(2),Y(2),A(2)
72                  N=0
73       200        CALL READ(A,LEN,MOD,LNO,IUNIT,&999)
74                  LEN=LEN/4
75                  IF(CGETST(0,24,A(1)) .EQ. CGETST(0,24,WTM))GOTO 999
76                  DO 100 I=1,LEN,2
77                  N=N+1
78                  X(N) = A(I)
79       100        Y(N) = A(I+1)
80                  GOTO 200
81       999        RETURN
82                  END
```

# Fortran Program for Mapping Areas of Competition (Shared CCS Areas) Between Universities Within the Province and Student Migration to Adjacent Provinces

```
 1                 REAL FOXES/ZFFFFFFFF/
 2                 REAL SH/0.04/,NH/.118/,SYM/'*'/,NUM
 3                 LOGICAL FOXFLG
 4                 DIMENSION X(8000),Y(8000),A(16000),VECTOR(800,6)
 5                 NNN=0
 6          30 NNN=NNN+1
 7             READ(7,31,END=32)VECTOR(NNN,1),IPROV,(VECTOR(NNN,J),J=2,6)
 8          31 FORMAT(F5.0,I5,5X,4F5.0,F10.0)
 9             VECTOR(NNN,2)=VECTOR(NNN,2)+VECTOR(NNN,3)
10             VECTOR(NNN,4)=VECTOR(NNN,4)+VECTOR(NNN,5)
11      C IF FULLTIME USE 2, IF PARTTIME USE 4
12      C IF EMPTY CCS'S THEN REPLACE LINE 14 WITH
13      C      IF(IPROV.NE 46)GOTO 34
14      C      IF(VECTOR(NNN,2).EQ.0. AND.VECTOR(NNN,4).EQ.0.0) GO TO 30
15             IF(VECTOR(NNN,4).NE.0.0) GO TO 30
16      C   34 NNN=NNN-1
17             GO TO 30
18          32 NNN=NNN-1
19                 IUNIT = 1
20                 CALL PLOTS
21                 CALL FACTOR(.427)
22                 CALL XLIMIT(100.0)
23                 WRITE(6,11)
24      11         FORMAT('&ENTER NO. OF FILES(I3) ')
25                 READ(5,10) NF
26      10         FORMAT(I3)
27                 IF(NF.EQ.0)GOTO 999
28                 DO  200 K=1,NF
29                 N=0
30                 FOXFLG=.FALSE
31                 IPEN=3
32                 CALL INPUT(X,Y,N,A,IUNIT)
33                 IF(N .EQ. 0) GOTO 999
34             IMM=0
35                 DO 100 I=1,N
36                 IF(X(I) .EQ. FOXES) GOTO 101
37                 IF(FOXFLG)GOTO 102
38                 CALL PLOT(X(I),Y(I),IPEN)
39                 IPEN=2
40                 GOTO 100
41         101 DO 80 KKK=1,NNN
42             IF(Y(I).NE.VECTOR(KKK,1)) GO TO 80
43             GO TO 81
44          80 CONTINUE
45             IMM=1
46             FOXFLG=.TRUE.
47             GO TO 100
48          81     FOXFLG=.TRUE
48.2               NUM=Y(I)
49      C      NUM=(VECTOR(KKK,2)*100.0)/VECTOR(KKK,6)
50                 GOTO 100
51         102 IF(IMM NE.1) GO TO 84
52             IMM=0
53             FOXFLG=.FALSE
54             GO TO 100
55          84     IPEN=3
56                 XOFF=X(I)+0.05
57                 YOFF=Y(I)+0.05
58                 CALL NUMBER(XOFF,YOFF,NH,NUM,0.0,-1)
59                 CALL SYMBOL(X(I),Y(I),SH,SYM,0.0,1)
```

```
60                 FOXFLG=.FALSE
61      100        CONTINUE
62      200        CONTINUE
63      999        CALL PLOT(0.0,0.0,999)
64                 STOP
65                 END
66                 SUBROUTINE INPUT(X,Y,N,A,IUNIT)
67                 INTEGER CGETST
68                 INTEGER*2 LEN
69                 INTEGER LNO/0/, MOD/0/
70                 REAL WTM/'WTM'/
71                 DIMENSION X(2),Y(2),A(2)
72                 N=0
73      200        CALL READ(A,LEN,MOD,LNO,IUNIT,&999)
74                 LEN=LEN/4
75                 IF(CGETST(0,24,A(1)) .EQ. CGETST(0,24,WTM))GOTO 999
76                 DO 100 I=1,LEN,2
77                 N=N+1
78                 X(N) = A(I)
79      100        Y(N) = A(I+1)
80                 GOTO 200
81      999        RETURN
82                 END
```

# APPENDIX G

# AGGREGATED CCS AREAS

| CCS AREA AGGREGATE IDENTIFICATION | CCS AREAS AGGREGATED |
|---|---|
| | British Columbia |
| 3090 (Victoria) | 3090, 2772, 2770, 2774 |
| 2805 (Dewdney - Alouette, Sub. A) | 2805, 2804, 2803, 2802 |
| 2827 (Vancouver) | 2827, 2818, 2822, 2826, 3098, 2820, 3099, 2823, 2824 (includes entire "Greater Vancouver" Census Division No. 15) |
| 2782 (Abbotsford) | 2782, 2780, 2781 |
| | Alberta |
| | Saskatchewan |
| | Manitoba |
| 2950 (Winnipeg) | 2950, 2360, 2359 |
| | Western Ontario |
| 2115 (Thunder Bay) | 2115, 2117, 2119, 2124, 2126, 2127, 2128, 2131, 2041 |

B30330